# Computing Ethics: a bibliography

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#### Abstract

A bibliography of Computing (digital) ethics papers for use in teaching.

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# 1 General Ethics - Overview and History

# Honesty

References: General - Overview and History		
[Cohen02]	Gerald A Cohen. Deeper into bullshit. Contours of agency: Essays on themes from Harry Frankfurt, pages 321–339, 2002. ETHICS4EU - Ethics: General.Honesty	
[FalkenbergHerremans95]	Loren Falkenberg and Irene Herremans. Ethical behaviours in organizations: directed by the formal or informal systems? <i>Journal of business Ethics</i> , 14(2):133–143, 1995. <b>ETHICS4EU - Ethics: General</b>	
[Foot67]	Philippa Foot. The problem of abortion and the doctrine of double effect. Oxford Review, 5:5–15, 1967. <b>ETHICS4EU - Ethics: General</b>	
[Frankfurt09]	Harry G Frankfurt. On bullshit. Princeton University Press, 2009. ETHICS4EU - Ethics: General.Honesty	
[HessFore18]	Justin L Hess and Grant Fore. A systematic literature review of US engineering ethics interventions. <i>Science and engineering ethics</i> , 24(2):551–583, 2018. ISSN 1471-5546. <b>ETHICS4EU - Ethics: General</b>	
[JerrimParkerShure19]	John Jerrim, Philip Parker, and Dominique Shure. Bullshitters. who are they and what do we know about their lives? <i>IZA Discussion Papers</i> , 12282, 2019. <b>ETHICS4EU - Ethics: General.Honesty</b>	
[LissackRichardson03]	Michael R Lissack and Kurt A Richardson. Models without morals: toward the ethical use of business models. <i>Emergence</i> , 5(2):72–102, 2003. <b>ETHICS4EU - Ethics: General</b>	
[PolonskyBPH-K01]	Michael Jay Polonsky, Pedro Quelhas Brito, Jorge Pinto, and Nicola Higgs-Kleyn. Consumer ethics in the European Union: A comparison of northern and southern views. <i>Journal of Business Ethics</i> , 31(2):117–130, 2001. ISSN 0167-4544. <b>ETHICS4EU - Ethics: General</b>	
[SteurerKonrad09]	Reinhard Steurer and Astrid Konrad. Businesssociety relations in Central-Eastern and Western Europe: How those who lead in sustainability reporting bridge the gap in corporate (social) responsibility. <i>Scandinavian Journal of Management</i> , 25(1):23–36, 2009. ISSN 0956-5221. <b>ETHICS4EU - Ethics: General</b>	

# 2 Digital Ethics - Overview and History

## References: Digital Ethics - Overview and History

[BerdichevskyNeuenschwander99]	Daniel Berdichevsky and Erik Neuenschwander. Toward an ethics of per- suasive technology. <i>Communications of the ACM</i> , 42(5):51–58, 1999. ISSN 0001-0782. ETHICS4EU - Ethics: Digital Ethics
[Brey12]	<ul> <li>Philip A E Brey. Anticipatory ethics for emerging technologies. NanoEthics, 6(1):1–13, 2012. ISSN 1871-4757.</li> <li>ETHICS4EU - Ethics: Digital Ethics</li> </ul>
[Bunge75]	Mario Bunge. Towards a technoethics. <i>Philosophic Exchange</i> , 6(1):3, 1975. <b>ETHICS4EU - Ethics: Digital Ethics</b>
[Bynum99]	Terrell Ward Bynum. The development of computer ethics as a philosophical field of study. <i>The Australian Journal of Professional and Applied Ethics</i> , 1(1):1–29, 1999. <b>ETHICS4EU - Ethics: Digital Ethics</b>
[Bynum00a]	Terrell Ward Bynum. A very short history of computer ethics. <i>APA Newslet-</i> <i>ters on Philosophy and Computers</i> , 99(2):2, 2000. <b>ETHICS4EU - Ethics: Digital Ethics</b>
[Bynum00]	Terrell Ward Bynum. The foundation of computer ethics. ACM SIGCAS Computers and Society, 30(2):6–13, jun 2000. ISSN 0095-2737. doi:10.1145/ 572230.572231. ETHICS4EU - Ethics: Digital Ethics
[Bynum01]	Terrell Ward Bynum. Computer ethics: Its birth and its future. <i>Ethics and Information Technology</i> , 3(2):109–112, 2001. ETHICS4EU - Ethics: Digital Ethics
[Bynum06]	Terrell Ward Bynum. Flourishing ethics. <i>Ethics and Information Technology</i> , 8(4):157–173, 2006. ISSN 1388-1957. <b>ETHICS4EU - Ethics: Digital Ethics</b>
[Bynum08]	Terrell Ward Bynum. Milestones in the History of Information and Computer Ethics. In Herman T. Himma, Kenneth Einar; Tavani, editor, <i>The Handbook of Information and Computer Ethics</i> , pages 25 – 48. John Wiley & Sons, Hoboken, New Jersey, 2008. ETHICS4EU - Ethics: Digital Ethics
[Bynum18]	Terrell Ward Bynum. Computer and Information Ethics. In Edward N. Zalta, editor, <i>The Stanford Encyclopedia of Philosophy</i> . Metaphysics Research Lab, Stanford University, summer 201 edition, 2018. <b>ETHICS4EU - Ethics: Digital Ethics</b>
[ConnollyFedoruk15]	Randy Connolly and Alan Fedoruk. Does computing need to go beyond good and evil impacts? Journal of Information, Communication and Ethics in Society, 13(3-4):190–204, 2015. ETHICS4EU - Ethics: Digital Ethics

[Dodig-Crnkovic03]	Gordana Dodig-Crnkovic. Shifting the paradigm of philosophy of science: Philosophy of information and a new renaissance. <i>Minds and Machines</i> , 13(4):521–536, 2003. ISSN 0924-6495. ETHICS4EU - Ethics: Digital Ethics
[FieslerGarrettBeard20]	Casey Fiesler, Natalie Garrett, and Nathan Beard. What do we teach when we teach tech ethics? a syllabi analysis. In <i>Proceedings of the 51st ACM Technical Symposium on Computer Science Education</i> , pages 289–295. 2020. <b>ETHICS4EU - Ethics: Digital Ethics</b>
[FlanaganHoweNissenbaum08]	Mary Flanagan, Daniel C Howe, and Helen Nissenbaum. Embodying values in technology: Theory and practice. <i>Information technology and moral philosophy</i> , 322, 2008. ETHICS4EU - Ethics: Digital Ethics
[Fleischman06]	William M. Fleischman. Meta-informatics and ethical issues in computing. In Renzo Davoli, Michael Goldweber, and Paola Salomoni, editors, <i>ITiCSE</i> , pages 232–236. ACM, 2006. ISBN 1-59593-055-8. ETHICS4EU - Ethics: Digital Ethics
[Floridi99]	Luciano Floridi. Information ethics: On the philosophical foundation of computer ethics. <i>Ethics and information technology</i> , 1(1):33–52, 1999. ISSN 1388-1957. <b>ETHICS4EU - Ethics: Digital Ethics</b>
[Floridi17]	Luciano Floridi. Information ethics: On the philosophical foundation of computer ethics. <i>Computer Ethics</i> , pages 63–82, 2017. <b>ETHICS4EU - Ethics: Digital Ethics</b>
[Floridi18]	Luciano Floridi. Soft ethics and the governance of the digital. <i>Philosophy &amp; Technology</i> , 31(1):1–8, 2018. ISSN 2210-5433. <b>ETHICS4EU - Ethics: Digital Ethics</b>
[FloridiSanders02]	Luciano Floridi and Jeff W Sanders. Mapping the foundationalist debate in computer ethics. <i>Ethics and information Technology</i> , 4(1):1–9, 2002. <b>ETHICS4EU - Ethics: Digital Ethics</b>
[Floridi05]	Luciano Floridi and Jeff W Sanders. Internet ethics: The constructionist values of homo poieticus. <i>The impact of the internet on our moral lives</i> , pages 195–214, 2005. ETHICS4EU - Ethics: Digital Ethics
[Floridi16]	Luciano Floridi and Mariarosaria Taddeo. What is data ethics? <i>Philosophical Transactions of The Royal Society A Mathematical Physical and Engineering Sciences</i> , 374:20160360, dec 2016. doi:10.1098/rsta.2016.0360. ETHICS4EU - Ethics: Digital Ethics
[FriedmanHendry12]	Batya Friedman and David Hendry. The envisioning cards: a toolkit for cat- alyzing humanistic and technical imaginations. In <i>Proceedings of the SIGCHI</i> conference on human factors in computing systems, pages 1145–1148. 2012. ETHICS4EU - Ethics: Digital Ethics
[FullerLKRFW10]	Ursula Fuller, Joyce Currie Little, Bob Keim, Charles Riedesel, Diana Fitch, and Su White. Perspectives on developing and assessing professional values

	in computing. ACM SIGCSE Bulletin, 41(4):174–194, 2010. ISSN 0097-8418. doi:10.1145/1709424.1709461. ETHICS4EU - Ethics: Digital Ethics
[Gero75]	John S Gero. Ethics in computer-aided design: a polemic. ACM SIGDA Newsletter, 5(4):9–14, 1975. ETHICS4EU - Ethics: Digital Ethics
[GordonSGTBCCOM21]	Damian Gordon, Ioannis Stavrakakis, J. Paul Gibson, Brendan Tierney, Anna Becevel, Andrea Curley, Michael Collins, , William O'Mahony, and Dympna O'Sullivan. Perspectives on computing ethics: a multi-stakeholder analysis. <i>Journal of Information, Communication and Ethics in Society</i> , 19(?):279–286, 2016. ISSN 1477-996X. doi:10.1108/JICES-12-2020-0127. ETHICS4EU - Ethics: Digital Ethics
[Gorniak-Kocikowska96]	Krystyna Gorniak-Kocikowska. The computer revolution and the problem of global ethics. <i>Science and engineering ethics</i> , 2(2):177–190, 1996. ISSN 1353-3452. <b>ETHICS4EU - Ethics: Digital Ethics</b>
[Gorniak-Kocikowska07]	Krystyna Górniak-Kocikowska. From computer ethics to the ethics of global ICT society. <i>Library Hi Tech</i> , 25(1):47–57, 2007. ISSN 07378831. doi: 10.1108/07378830710735858. <b>ETHICS4EU - Ethics: Digital Ethics</b>
[Gotterbarn91]	Donald Gotterbarn. Computer ethics: Responsibility regained. In <i>National Forum</i> , number 3 in 71, page 26. Honor Society of Phi Kappa Phi, 1991. ISBN 0162-1831. ETHICS4EU - Ethics: Digital Ethics
[Hall14]	<ul> <li>Brian R. Hall. A synthesized definition of computer ethics. ACM SIGCAS Computers and Society, 44(3):21–35, 2014. ISSN 0095-2737. doi:10.1145/2684097.2684102.</li> <li>ETHICS4EU - Ethics: Digital Ethics</li> </ul>
[Huggins15]	James K Huggins. Computing history & ethics: the relevance of the real world for social change. ACM SIGCAS Computers and Society, 45(2):34–34, 2015. ETHICS4EU - Ethics: Digital Ethics
[IqbalBeigh17]	Juneed Iqbal and Bilal Maqbool Beigh. Computer Ethics: Job of Computer Scientist. International Journal of Advanced Research in Computer Science and Software Engineering, 7(6):41–49, 2017. ISSN 22776451. doi:10.23956/ ijarcsse/v7i6/0135. ETHICS4EU - Ethics: Digital Ethics
[Johnson85]	Deborah Johnson. Computer ethics. the Philosophy of Computing and In- formation, 1985. ETHICS4EU - Ethics: Digital Ethics
[Kraft11]	Theresa Kraft. Computer ethics: A slow fade from black and white to shades of gray. <i>Information Systems Education Journal</i> , 9(4):37, 2011. <b>ETHICS4EU - Ethics: Digital Ethics</b>

[McLean11]	Athena McLean. Ethical frontiers of ict and older users: cultural, pragmatic and ethical issues. <i>Ethics and information technology</i> , 13(4):313–326, 2011. <b>ETHICS4EU - Ethics: Digital Ethics</b>
[Mitcham86]	Carl Mitcham. Computers: From ethos and ethics to mythos and religion: Notes on the new frontier between computers and philosophy. <i>Technology in</i> <i>Society</i> , 8(3):171–201, 1986. ETHICS4EU - Ethics: Digital Ethics
[Mitcham95]	Carl Mitcham. Computers, information and ethics: A review of issues and literature. <i>Science and Engineering Ethics</i> , 1(2):113–132, 1995. <b>ETHICS4EU - Ethics: Digital Ethics</b>
[Moor85]	James H Moor. What is computer ethics? <i>Metaphilosophy</i> , 16(4):266–275, 1985. ETHICS4EU - Ethics: Digital Ethics
[Parker68]	<ul> <li>Donn B Parker. Rules of ethics in information processing. Communications of the ACM, 11(3):198-201, 1968.</li> <li>ETHICS4EU - Ethics: Digital Ethics</li> </ul>
[PatrignaniWhitehouse14]	Norberto Patrignani and Diane Whitehouse. Slow tech: a quest for good, clean and fair ict. Journal of Information, Communication and Ethics in Society, 2014. ETHICS4EU - Ethics: Digital Ethics
[RogersonMillerLarson17]	Simon Rogerson, Keith Miller, and David Larson. The Ethics of Informa- tion Systems challenges and opportunities : a panel discussion. <i>Midwest</i> ( <i>MWAIS</i> ), 6, 2017. ETHICS4EU - Ethics: Digital Ethics
[Slack11]	James. M. Slack. Computer ethics - A slow fade from black and white to shades of gray. <i>Information System Education Journal</i> , 9(4):68, 2011. <b>ETHICS4EU - Ethics: Digital Ethics</b>
[StahlEJC14]	Bernd Carsten Stahl, Grace Eden, Marina Jirotka, and Mark Coeckelbergh. From computer ethics to responsible research and innovation in ict: The transition of reference discourses informing ethics-related research in infor- mation systems. <i>Information &amp; Management</i> , 51(6):810–818, 2014. ETHICS4EU - Ethics: Digital Ethics
[StahlTM16]	Bernd Carsten Stahl, Job Timmermans, and Brent Daniel Mittelstadt. The ethics of computing: A survey of the computing-oriented literature. Acm Computing Surveys (CSUR), 48(4):1–38, 2016. ETHICS4EU - Ethics: Digital Ethics
[Taneja19]	<ul> <li>Hemant Taneja. The era of move fast and break things is over. Harvard Business Review, 21, 2019.</li> <li>ETHICS4EU - Ethics: Digital Ethics</li> </ul>
[Tavani01]	Herman T. Tavani. The state of computer ethics as a philosophical field of inquiry: Some contemporary perspectives, future projections, and current resources. <i>Ethics and Information Technology</i> , 3(2):97–108, 2001. ISSN 15728439. doi:10.1023/A:1011889808481. <b>ETHICS4EU - Ethics: Digital Ethics</b>

[ThornleyETAL18]	Clare Victoria Thornley, Sinéad Murnane, Stephen McLoughlin, Marian Carcary, Eileen Doherty, and Louise Veling. The role of ethics in develop- ing professionalism within the global ict community. <i>International Journal</i> of Human Capital and Information Technology Professionals (IJHCITP), 9(4):56–71, 2018. ETHICS4EU - Ethics: Digital Ethics
[Vardi18]	Moshe Y Vardi. Move Fast and Break Things. <i>COMMUNICATIONS OF THE ACM</i> , 61(9), 2018. doi:10.1145/3244026. <b>ETHICS4EU - Ethics: Digital Ethics</b>
[VonKonsky08]	Brian R Von Konsky. Defining the ICT profession: A partnership of stake- holders. <i>Proceedings of the 21st Annual Conference of the National Advisory</i> <i>Committee on Computing Qualifications</i> , pages 15–22, 2008. ETHICS4EU - Ethics: Digital Ethics
[Wagner18]	Ben Wagner. Ethics as an escape from regulation: From ethics-washing to ethics-shopping. <i>Being profiling. Cogitas ergo sum</i> , pages 84–90, 2018. <b>ETHICS4EU - Ethics: Digital Ethics</b>
[Ware73]	Willis H Ware. Records, computers and the rights of citizens, 1973. ETHICS4EU - Ethics: Digital Ethics

# 3 Codes Of Conduct

# References: Codes Of Conduct

[Anderson92]	Ronald E Anderson. Acm code of ethics and professional conduct. Communications of the ACM, 35(5):94–99, 1992. ETHICS4EU - Ethics: Codes Of Conduct
[AndersonJGP93]	Ronald E Anderson, Deborah G Johnson, Donald Gotterbarn, and Judith Perrolle. Using the new ACM code of ethics in decision making. <i>Communications of the ACM</i> , 36(2):98–107, 1993. ETHICS4EU - Ethics: Codes Of Conduct
[GotterbarnMR99]	Donald Gotterbarn, Keith W. Miller, and Simon Rogerson. Software engineering code of ethics is approved. <i>Commun. ACM</i> , 42(10):102–107, 1999. <b>ETHICS4EU - Ethics: Codes Of Conduct</b>
[Martin98]	C. Dianne Martin. Deconstructing the ACM code of ethics and professional conduct. SIGCSE Bulletin (Association for Computing Machinery, Special Interest Group on Computer Science Education), 30(4), 1998. ISSN 00978418. doi:10.1145/306286.306291. ETHICS4EU - Ethics: Codes Of Conduct

# 4 Books

## **References:** Books

[BerleurHercheuiHilty10]	Jacques J Berleur, Magda David Hercheui, and Lorenz M Hilty. What Kind
	of Information Society? Governance, Virtuality, Surveillance, Sustainability,
	Resilience: 9th IFIP TC 9 International Conference, HCC9 2010 and 1st IFIP

	TC 11 International Conference, CIP 2010, Held as Part of WCC 2010, Bris- bane, Australia, Sep, volume 328. Springer, 2010. ISBN 3642154794. ETHICS4EU - Ethics: Privacy, Society
[Boddington17]	Paula Boddington. Towards a code of ethics for artificial intelligence. Springer, 2017.
	ETHICS4EU - Ethics: Autonomy, Bias
[BynumSimon04]	Terrell Ward Bynum and Rogerson Simon. Computer ethics and professional responsibility. Blackwell Pub., 2004. ETHICS4EU - Ethics: Professionalism
[Floridi10]	Luciano Floridi. The Cambridge handbook of information and computer ethics. Cambridge University Press, 2010. ETHICS4EU - Ethics: Digital Ethics
[Floridi14]	Luciano Floridi. The fourth revolution: How the infosphere is reshaping human reality. OUP Oxford, 2014. ISBN 0191667692. ETHICS4EU - Ethics: Digital Ethics
[Gillespie18]	Tarleton Gillespie. Custodians of the Internet: Platforms, content moderation, and the hidden decisions that shape social media. Yale University Press, 2018. ETHICS4EU - Industry: Social Media. Ethics: Society
[HimmaTavani09]	<ul> <li>Kenneth Einar Himma and Herman T. Tavani. The Handbook of Information and Computer Ethics. Wiley, 2009. ISBN 9780471799597. doi: 10.1002/9780470281819.</li> <li>ETHICS4EU - Ethics: Digital Ethics</li> </ul>
[Johnson09]	Keith W. Johnson, Deborah G.; Miller, editor. <i>Computer Ethics</i> . Pearson, Upper Saddle River, N.J., 4th edition, 2009. ISBN 978-0131112414. <b>ETHICS4EU - Ethics: Digital Ethics</b>
[KirschnerHendrick20]	<ul> <li>Paul A Kirschner and Carl Hendrick. How Learning Happens: Seminal Works in Educational Psychology and what They Mean in Practice. Routledge, 2020. ISBN 0429061528.</li> <li>ETHICS4EU - Industry: Academia. Ethics: Bias, Discrimination</li> </ul>
[Kranzberg19]	Melvin Kranzberg. <i>Ethics in an age of pervasive technology</i> . Routledge, 2019. ISBN 0429728018. ETHICS4EU - Ethics: Digital Ethics
[Lessig09]	Lawrence Lessig. Code: And other laws of cyberspace. ReadHowYouWant.com, 2009. ETHICS4EU - Industry: Law. Ethics: Bias, Society
[Macnish2017]	Kevin Macnish. The ethics of surveillance: An introduction. Routledge, 2017. ISBN 1351669478.
	ETHICS4EU - Ethics: Privacy
[OKeefeBrien18]	<ul> <li>Katherine O'Keefe and Daragh O Brien. Ethical data and information management: concepts, tools and methods. Kogan Page Publishers, 2018. ISBN 0749482052.</li> <li>ETHICS4EU - Ethics: Digital Ethics</li> </ul>

Cathy O'Neil. Weapons of math destruction: How big data increases inequality and threatens democracy. Broadway Books, 2016. ETHICS4EU - Ethics: Society. Industry: Government
 Leif Bloch Rasmussen, Colin Beardon, and Silvio Munari. Computers and Net- works in the Age of Globalization: IFIP TC9 Fifth World Conference on Human Choice and Computers August 2528, 1998, Geneva, Switzerland, volume 57. Springer Science & Business Media, 2000. ISBN 0792372530. ETHICS4EU - Ethics: Digital Ethics
Sarah T Roberts. Behind the screen: Content moderation in the shadows of social media. Yale University Press, 2019. ETHICS4EU - Industry: Social Media. Ethics: Society
 <ul> <li>Karen Schrier. Learning, education and games. Volume one: Curricular and design considerations. Carnegie Mellon University, 2014.</li> <li>ETHICS4EU - Industry: Game Development. Ethics: Discrimination and Identity</li> </ul>
 Karen Schrier and David Gibson. Ethics and game design: teaching values through play: teaching values through play. IGI Global, 2010. ETHICS4EU - Industry: Game Development. Ethics: Discrimination and Iden- tity
 Herman T Tavani. <i>Ethics and technology</i> . Wiley, 2013. ETHICS4EU - Ethics: Digital Ethics
John W Tukey. <i>Exploratory data analysis</i> , volume 2. Reading, MA, 1977. <b>ETHICS4EU - Ethics: Digital Ethics</b>
 Gert Vermeulen and Eva Lievens. Data protection and privacy under pressure: transatlantic tensions, EU surveillance, and big data. Maklu, 2017. ETHICS4EU - Ethics: Privacy
 Joseph Weizenbaum. Computer power and human reason: From judgment to calculation. WH Freeman and Co, 1976. ETHICS4EU - Ethics: Autonomy
Meredith Whittaker, Kate Crawford, Roel Dobbe, Genevieve Fried, Elizabeth Kaziunas, Varoon Mathur, Sarah Mysers West, Rashida Richardson, Jason Schultz, and Oscar Schwartz. <i>AI now report 2018</i> . AI Now Institute at New York University New York, 2018. <b>ETHICS4EU - Ethics: Autonomy, Bias</b>
Norbert Wiener. The Human Use Of Human Beings: Cybernetics And Society. Houghton Mifflin, second ed. edition, 1950. ETHICS4EU - Ethics: Society
Norbert Wiener. The human use of human beings: Cybernetics and society. Da Capo Press, 1988. ETHICS4EU - Ethics: Society
Shoshana Zuboff. The age of surveillance capitalism: The fight for a human future at the new frontier of power. Profile books, London, 2019. ISBN 978-1-7881-6316-3. ETHICS4EU - Ethics: Privacy

# 5 Reports (Misc)

- 1. ACM Code of Ethics and Professional Conduct
- 2. IEEE Ethics In Action Ethically Aligned Design
- 3. IEEE Position Statement Ethical Aspects of Autonomous and Intelligent Systems
- 4. People, Power and Technology The 2020 Digital Attitudes Report doteveryone
- 5. Brave report Surveillance on UK council websites
- 6. EU Integrity Project Deliverable D3.2 Results of mapping current practice
- 7. Ethical OS Toolkit
- 8. Ethical/Social Impact of Informatics as a Study Subject in Informatics University Degree Programs
- 9. Statement on artificial intelligence, robotics and autonomous' systems, EGE, European Group on Ethics in Science and New Technologies, 2018.
- 10. Ethics of Information and Communication Technologies (Opinion of the EGE No. 26, pp. 136), European Group on Ethics in Science and New Technologies, 2012.
- 11. Ethics education in science, ALLEA, Permanent Working Group on Science and Ethics, 2013.

# 6 Multimedia Links - Video/Audio

# 7 Computing Areas/Domains

### 7.1 Agile Methods

#### **References: Agile Methods**

[Judy09] Ken H Judy. Agile principles and ethical conduct. In 2009 42nd Hawaii International Conference on System Sciences, pages 1–8. IEEE, 2009.
 ETHICS4EU - Computing: Agile. Ethics: Professionalism, Technical Debt

[MillerLarson05] Keith W Miller and David K Larson. Agile software development: human values and culture. *IEEE Technology and Society Magazine*, 24(4):36–42, 2005. **ETHICS4EU - Computing: Agile** 

## 7.2 AI, ML and Big Data

#### References: AI and ML and big Data

[AIHLEG19] High-Level Independent Group on Artificial Intelligence AI HLEG. Ethics Guidelines for Trustworthy AI. Technical report, European Commission, 2019. ETHICS4EU - Computing: AI
 [AivodjiETAL19] Ulrich Aïvodji, Hiromi Arai, Olivier Fortineau, Sébastien Gambs, Satoshi Hara, and Alain Tapp. Fairwashing: the risk of rationalization. arXiv preprint arXiv:1901.09749, 2019. ETHICS4EU - Computing: AI

[BurtonGKKMW17]	Emanuelle Burton, Judy Goldsmith, Sven Koenig, Benjamin Kuipers, Nicholas Mattei, and Toby Walsh. Ethical considerations in artificial intelligence courses. <i>AI magazine</i> , 38(2):22–34, 2017. <b>ETHICS4EU - Computing: AI</b>
[BurtonGoldsmithMattei15]	Emanuelle Burton, Judy Goldsmith, and Nicholas Mattei. Teaching ai ethics using science fiction. In Workshops at the Twenty-Ninth AAAI Conference on Artificial Intelligence. 2015. ETHICS4EU - Computing: AI
[GoodmanFlaxman17]	Bryce Goodman and Seth Flaxman. European Union regulations on algorithmic decision-making and a right to explanation. <i>AI magazine</i> , 38(3):50–57, 2017. ISSN 2371-9621. <b>ETHICS4EU - Computing: AI</b>
[GruschkaMVJ18]	Nils Gruschka, Vasileios Mavroeidis, Kamer Vishi, and Meiko Jensen. Privacy issues and data protection in big data: A case study analysis under gdpr. In 2018 IEEE International Conference on Big Data (Big Data), pages 5027–5033. IEEE, 2018. ETHICS4EU - Computing: AI
[GurkaynakYilmazHaksever16]	Gonenc Gurkaynak, Ilay Yilmaz, and Gunes Haksever. Stifling artificial intelli- gence: Human perils. Computer Law & Security Review, 32(5):749–758, 2016. ISSN 0267-3649. ETHICS4EU - Computing: AI
[LarusETAL18]	James Larus, Chris Hankin, Siri Granum Carson, Markus Christen, Silvia Crafa, Oliver Grau, Claude Kirchner, Bran Knowles, Andrew McGettrick, Damian Andrew Tamburri, et al. When computers decide: European rec- ommendations on machine-learned automated decision making, 2018. ETHICS4EU - Computing: AI
[Muller20]	Vincent C. Müller. <i>The Stanford Encyclopedia of Philosophy</i> , chapter Ethics of Artificial Intelligence and Robotics. Edward N. Zalta (ed.), 2020.
[ObermeyerPVM19]	Ziad Obermeyer, Brian Powers, Christine Vogeli, and Sendhil Mullainathan. Dissecting racial bias in an algorithm used to manage the health of populations. <i>Science</i> , 366(6464):447–453, 2019. <b>ETHICS4EU - Computing: AI</b>
[PrabhuBirhane20]	Vinay Uday Prabhu and Abeba Birhane. Large image datasets: A pyrrhic win for computer vision? <i>arXiv preprint arXiv:2006.16923</i> , 2020. <b>ETHICS4EU - Computing: AI</b>
[RasvGH18]	<ul> <li>Gabriëlle Ras, Marcel van Gerven, and Pim Haselager. Explanation methods in deep learning: Users, values, concerns and challenges. In <i>Explainable and Interpretable Models in Computer Vision and Machine Learning</i>, pages 19–36.</li> <li>Springer, 2018.</li> <li>ETHICS4EU - Computing: AI</li> </ul>
[RichardsKing14]	Neil M Richards and Jonathan H King. Big data ethics. Wake Forest L. Rev., 49:393, 2014. ETHICS4EU - Computing: AI

[RyanStahl20]	Mark Ryan and Bernd Carsten Stahl. Artificial intelligence ethics guidelines for developers and users: clarifying their content and normative implications. <i>Journal of Information, Communication and Ethics in Society</i> , 2020. ETHICS4EU - Computing: AI
[Siapka18]	Anastasia Siapka. The ethical and legal challenges of artificial intelligence: The eu response to biased and discriminatory ai. <i>Available at SSRN 3408773</i> , 2018. <b>ETHICS4EU - Computing: AI</b>
[StrubellGMcC19]	Emma Strubell, Ananya Ganesh, and Andrew McCallum. Energy and policy considerations for deep learning in nlp. In <i>Proceedings of the 57th Annual Meeting of the Association for Computational Linguistics</i> , pages 3645–3650. 2019.
[SureshGuttag19]	Harini Suresh and John V Guttag. A framework for understanding unintended consequences of machine learning. <i>arXiv preprint arXiv:1901.10002</i> , 2019. <b>ETHICS4EU - Computing: AI</b>
[Taddeo18]	Mariarosaria Taddeo and Luciano Floridi. How AI can be a force for good. <i>Science</i> , 361(6404):751 LP – 752, aug 2018. doi:10.1126/science.aat5991. <b>ETHICS4EU - Computing: AI</b>
[TenePolonetsky11]	Omer Tene and Jules Polonetsky. Privacy in the age of big data: a time for big decisions. <i>Stan. L. Rev. Online</i> , 64:63, 2011. <b>ETHICS4EU - Computing: AI</b>
[Tunstall18]	Samuel L Tunstall. Models as weapons: Review of weapons of math destruction: How big data increases inequality and threatens democracy by cathy o'neil (2016). <i>Numeracy</i> , 11(1):10, 2018. ETHICS4EU - Computing: AI
[WhittlestoneNAC19]	Jess Whittlestone, Rune Nyrup, Anna Alexandrova, and Stephen Cave. The role and limits of principles in ai ethics: towards a focus on tensions. In <i>Proceedings of the 2019 AAAI/ACM Conference on AI, Ethics, and Society</i> , pages 195–200. 2019. ETHICS4EU - Computing: AI
[Wilk19]	Asher Wilk. Teaching AI, Ethics, Law and Policy. <i>arXiv preprint</i> <i>arXiv:1904.12470</i> , 2019. <b>ETHICS4EU - Computing: AI</b>
[Wing21]	Jeannette M. Wing. Trustworthy a i. Commun. ACM, 64(10):6471, September 2021. ISSN 0001-0782. doi:10.1145/3448248.
[ZicariETAL21]	Roberto V Zicari, John Brodersen, James Brusseau, Boris Düdder, Timo Eichhorn, Todor Ivanov, Georgios Kararigas, Pedro Kringen, Melissa McCullough, Florian Möslein, et al. Z-inspection®: A process to assess trustworthy ai. <i>IEEE Transactions on Technology and Society</i> , 2021. ETHICS4EU - Computing: AI

### 7.3 Computer Vision

### 7.4 Data Science

#### **References: Data Science**

[ShapiroMO'DLZDH20] Ben Rydal Shapiro, Amanda Meng, Cody O'Donnell, Charlotte Lou, Edwin Zhao, Bianca Dankwa, and Andrew Hostetler. Re-shape: A method to teach data ethics for data science education. In *Proceedings of the 2020 CHI Conference on Human Factors* in Computing Systems, pages 1–13. 2020. ETHICS4EU - Computing: Data Science

[Stodden20] Victoria Stodden. The data science life cycle: a disciplined approach to advancing data science as a science. *Communications of the ACM*, 63(7):58–66, 2020. ETHICS4EU - Computing: Data Science

# 7.5 Design

#### **References:** Design

[DipaolaPB20] Daniella DiPaola, Blakeley H Payne, and Cynthia Breazeal. Decoding design agendas: an ethical design activity for middle school students. In *Proceedings of the Interaction Design and Children Conference*, pages 1–10. 2020.
 ETHICS4EU - Computing: Design

## 7.6 Formal Methods

#### **References: Formal Methods**

[BenzmullerParentVanDerTorre18]	Christoph Benzmüller, Xavier Parent, and Leendert van der Torre. A de- ontic logic reasoning infrastructure. In <i>Conference on Computability in Europe</i> , pages 60–69. Springer, 2018. <b>ETHICS4EU - Computing: Formal Methods</b>
[DennisFSW16]	Louise Dennis, Michael Fisher, Marija Slavkovik, and Matt Webster. For- mal verification of ethical choices in autonomous systems. <i>Robotics and</i> <i>Autonomous Systems</i> , 77:1–14, 2016. ETHICS4EU - Ethics: autonomy. Computing: Formal Methods
[DyrkolbotnPS18]	Sjur Dyrkolbotn, Truls Pedersen, and Marija Slavkovik. On the distinction between implicit and explicit ethical agency. In <i>Proceedings of the 2018</i> AAAI/ACM Conference on AI, Ethics, and Society, pages 74–80. ACM, 2018. ETHICS4EU - Computing: Formal Methods

#### 7.7 Game Development

#### **References: Game Development**

 [HeronBelford14] Michael Heron and Pauline Belford. "It's only a game" - ethics, empathy and identification in game morality systems. The Computer Games Journal, 3(1):34–53, 2014.
 ETHICS4EU - Computing: Game Development

[Schrier14]	Karen Schrier. Learning, education and games. Volume one: Curricular and design consid- erations. Carnegie Mellon University, 2014. ETHICS4EU - Application Domain: Game Development
[Schrier17]	Karen Schrier. Designing role-playing video games for ethical thinking. <i>Educational Technology Research and Development</i> , 65(4):831–868, 2017. <b>ETHICS4EU - Computing: Game Development</b>
[SchrierGibson20]	Karen Schrier and David Gibson. Ethics and game design: teaching values through play: teaching values through play. IGI Global, 2010. ETHICS4EU - Application Domain: Game Development

## 7.8 HCI Design

References: User Interface and HCI Design

 [GrayKBHT18] Colin M Gray, Yubo Kou, Bryan Battles, Joseph Hoggatt, and Austin L Toombs. The dark (patterns) side of ux design. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*, pages 1–14. 2018.
 ETHICS4EU - Computing: HCI

# 7.9 IOT

#### References: Internet of things (IOT)

[AbobakrAzer17]	<ul> <li>Ahmed AboBakr and Marianne A Azer. IoT ethics challenges and legal issues.</li> <li>In 2017 12th International Conference on Computer Engineering and Systems (ICCES), pages 233–237. IEEE, 2017.</li> <li>ETHICS4EU - Computing: IOT</li> </ul>
[AntoniouAndreou19]	Josephina Antoniou and Andreas Andreou. Case study: The internet of things and ethics. <i>The Orbit Journal</i> , 2(2), 2019. <b>ETHICS4EU - Computing: IOT</b>
[AveryLiu11]	Matthew Avery and Dan Liu. Bringing smart pills to market: Fda regulation of ingestible drug/device combination products. <i>Food and drug law journal</i> , 66(3):329–352, 2011.
[Cerf20]	Vinton G. Cerf. On the internet of medical things. <i>Commun. ACM</i> , 63(8):5, July 2020. ISSN 0001-0782. doi:10.1145/3406779. <b>ETHICS4EU - Computing: IOT</b>
[Davies13]	Nigel Davies. Ethics in pervasive computing research. <i>IEEE Pervasive Computing</i> , 12(3):2–4, 2013. ISSN 1536-1268. <b>ETHICS4EU - Computing: IOT</b>
[Hilty15]	Lorenz M Hilty. Ethical issues in ubiquitous computing - three technology assessment studies revisited. In <i>Ubiquitous Computing in the Workplace</i> , pages 45–60. Springer, 2015. <b>ETHICS4EU - Computing: IOT</b>
[MartaniGPCW20]	Andrea Martani, Lester Darryl Geneviève, Christopher Poppe, Carlo Casonato, and Tenzin Wangmo. Digital pills: a scoping review of the empirical literature and analysis of the ethical aspects. <i>BMC medical ethics</i> , $21(1)$ :1–13, 2020.

[Mittelstadt17]	Brent Mittelstadt. Ethics of the health-related internet of things: a narrative review. <i>Ethics and Information Technology</i> , 19(3):157–175, 2017. <b>ETHICS4EU - Computing: IOT</b>
[MyersFBH08]	Julie Myers, Thomas R Frieden, Kamal M Bherwani, and Kelly J Henning. Ethics in public health research: privacy and public health at risk: public health con- fidentiality in the digital age. <i>American Journal of public health</i> , 98(5):793–801, 2008. <b>ETHICS4EU - Computing: IOT</b>
[SpiekermannPallas06]	Sarah Spiekermann and Frank Pallas. Technology paternalismwider implications of ubiquitous computing. <i>Poiesis &amp; praxis</i> , 4(1):6–18, 2006. ISSN 1615-6609. <b>ETHICS4EU - Computing: IOT</b>
[WoodApthropeFeamster17]	Daniel Wood, Noah Apthorpe, and Nick Feamster. Cleartext data transmissions in consumer iot medical devices. In <i>Proceedings of the 2017 Workshop on Internet</i> of Things Security and Privacy, pages 7–12. 2017. ETHICS4EU - Computing: IOT

## 7.10 Mobile Devices

#### **References:** Mobile Devices

[LeinsCulnaneRubinstein20] Kobi Leins, Chris Culnane, and Benjamin IP Rubinstein. Tracking, tracing, trust: contemplating mitigating the impact of covid-19 through technological interventions. The Medical Journal of Australia, page 1, 2020. ETHICS4EU - Computing: Mobile

# 7.11 Programming

# **References:** Programming

[CaliffGoodwin05]	Mary Elaine Califf and Mary Goodwin. Effective incorporation of ethics into courses that focus on programming. In <i>ACM SIGCSE Bulletin</i> , volume 37,1, pages 347–351. ACM, 2005. <b>ETHICS4EU - Computing: Programming</b>
[GordonCollinsO'Sullivan21]	Damian Gordon, Michael Collins, and Dympna O'Sullivan. The development of teaching case studies to explore ethical issues associated with computer programming: Four case studies on programming ethics. In <i>United Kingdom and Ireland Computing Education Research conference.</i> , pages 1–7. 2021. <b>ETHICS4EU - Computing: Programming</b>
[LadwigSchwieger20]	Christine Ladwig and Dana Schwieger. Ethical coding: Privacy, ethics & law in computing. <i>Information Systems Education Journal</i> , 18(2):50–57, 2020. <b>ETHICS4EU - Computing: Programming</b>
[MittelstadtATWF16]	Brent Daniel Mittelstadt, Patrick Allo, Mariarosaria Taddeo, Sandra Wachter, and Luciano Floridi. The ethics of algorithms: Mapping the debate. <i>Big Data &amp; Society</i> , 3(2):2053951716679679, 2016. ISSN 2053-9517. ETHICS4EU - Computing: Programming

[WebbETAL19]Helena Webb, Menisha Patel, Michael Rovatsos, Alan Davoust, Sofia Ceppi, Ans-<br/>gar Koene, Liz Dowthwaite, Virginia Portillo, Marina Jirotka, and Monica Cano.<br/>It would be pretty immoral to choose a random algorithm. Journal of Informa-<br/>tion, Communication and Ethics in Society, 2019.ETHICS4EU - Computing: Programming

### 7.12 Security

#### 7.12.1 Blockchain

#### **References: Security**

[Bland14] Mike Bland. Finding more than one worm in the apple. Communications of the ACM, 57(7):58–64, 2014. ETHICS4EU - Computing: Security

[SipiorWardRoselli05] Janice C Sipior, Burke T Ward, and Georgina R Roselli. The ethical and legal concerns of spyware. Information Systems Management, 22(2):39–49, 2005. ETHICS4EU - Computing: Security

# 7.13 Software Engineering

#### **References: Software Engineering**

[AvgeriouETAL20]	Paris C Avgeriou, Davide Taibi, Apostolos Ampatzoglou, Francesca Arcelli Fontana, Terese Besker, Alexandros Chatzigeorgiou, Valentina Lenarduzzi, Antonio Martini, Nasia Moschou, Ilaria Pigazzini, et al. An overview and comparison of technical debt measurement tools. <i>IEEE Software</i> , 2020.
[Boehm06]	Barry W Boehm. Value-based software engineering: Seven key elements and ethical considerations. In <i>Value-based software engineering</i> , pages 109–132. Springer, 2006. ETHICS4EU - Computing: Software Engineering
[BrandenburgMinge19]	Stefan Brandenburg and Michael Minge. Epos–an instrument for the assessment of the ethical position in software development. <i>Theoretical Issues in Ergonomics Science</i> , 20(2):153–165, 2019. <b>ETHICS4EU - Computing: Software Engineering</b>
[Leveson20]	Nancy Leveson. Are you sure your software will not kill anyone? Communi- cations of the ACM, 63(2):25–28, 2020. ETHICS4EU - Computing: Software Engineering
[NarayananVallor14]	Arvind Narayanan and Shannon Vallor. Why software engineering courses should include ethics coverage. <i>Communications of the ACM</i> , 57(3):23–25, 2014. <b>ETHICS4EU - Computing: Software Engineering</b>
[SkenderiLuma-OsmaniImeri20]	Muhamed Skenderi, Shkurte Luma-Osmani, and Florinda Imeri. Ethics in DevOps, the attitude of programmers towards it. <i>Journal of Natural Sciences and Mathematics of UT</i> , 5(9-10):69–85, 2020. ETHICS4EU - Computing: Software Engineering

# 8 Ethical Issues

# 8.1 Autonomy

## **References:** Autonomy

[AveryLiu11]	Matthew Avery and Dan Liu. Bringing smart pills to market: Fda regulation of ingestible drug/device combination products. <i>Food and drug law journal</i> , 66(3):329–352, 2011. ETHICS4EU - Industry: Health. Ethics: Autonomy, Privacy, Safety and Security
[CallaghanClarkeChin09]	Vic Callaghan, Graham Clarke, and Jeannette Chin. Some socio-technical aspects of intelligent buildings and pervasive computing research. <i>Intelligent Buildings International</i> , 1(1):56–74, 2009. ISSN 1750-8975. <b>ETHICS4EU - Industry: Energy. Ethics: Autonomy</b>
[Cerf20]	Vinton G. Cerf. On the internet of medical things. Commun. ACM, 63(8):5, July 2020. ISSN 0001-0782. doi:10.1145/3406779. ETHICS4EU - Computing: IOT. Industry: Health. Ethics: Autonomy, Privacy, Safety and Security
[DennisFSW16]	Louise Dennis, Michael Fisher, Marija Slavkovik, and Matt Webster. Formal verification of ethical choices in autonomous systems. <i>Robotics and Autonomous Systems</i> , 77:1–14, 2016. ETHICS4EU - Ethics: autonomy. Computing: Formal Methods. Industry: Robotics
[HolsteinDodig-Crnkovic18]	Tobias Holstein and Gordana Dodig-Crnkovic. Avoiding the intrinsic unfairness of the trolley problem. In <i>Proceedings of the International Workshop on Software</i> <i>Fairness</i> , pages 32–37. 2018. ETHICS4EU - Computing: AI. Ethics: Autonomy. Industry: Transport, Robotics
[HolsteinD-CP20]	Tobias Holstein, Gordana Dodig-Crnkovic, and Patrizio Pelliccione. Real-world ethics for self-driving cars. In <i>Proceedings of the ACM/IEEE 42nd International</i> <i>Conference on Software Engineering: Companion Proceedings</i> , pages 328–329. 2020. ETHICS4EU - Industry: Robotics. Ethics: Autonomy
[MartaniGPCW20]	Andrea Martani, Lester Darryl Geneviève, Christopher Poppe, Carlo Casonato, and Tenzin Wangmo. Digital pills: a scoping review of the empirical literature and analysis of the ethical aspects. <i>BMC medical ethics</i> , 21(1):1–13, 2020. ETHICS4EU - Industry: Health. Ethics: Autonomy, Privacy, Safety and Security
[McCullaghBeattieNugent10]	Paul J McCullagh, Mark Beattie, and Chris D Nugent. Pervasive technology to facilitate wellness. In <i>Proceedings of the 3rd International Conference on</i> <i>Pervasive Technologies Related to Assistive Environments</i> , pages 1–4. 2010. ETHICS4EU - Industry: Energy. Ethics: Autonomy, Privacy
[Mittelstadt17]	Brent Mittelstadt. Ethics of the health-related internet of things: a narrative review. <i>Ethics and Information Technology</i> , 19(3):157–175, 2017. ETHICS4EU - Computing: IOT. Industry: Health. Ethics: Autonomy, Privacy, Safety

[MyersFBH08]	<ul> <li>Julie Myers, Thomas R Frieden, Kamal M Bherwani, and Kelly J Henning. Ethics in public health research: privacy and public health at risk: public health confidentiality in the digital age. American Journal of public health, 98(5):793–801, 2008.</li> <li>ETHICS4EU - Computing: IOT. Industry: Health. Ethics: Privacy</li> </ul>
[ShahriariShahriari17]	Kyarash Shahriari and Mana Shahriari. IEEE standard review Ethically aligned design: A vision for prioritizing human well-being with artificial intelligence and autonomous systems. In 2017 IEEE Canada International Humanitarian Technology Conference (IHTC), pages 197–201. IEEE, 2017. ISBN 1509062645. ETHICS4EU - Computing: AI. Ethics: Autonomy. Industry: Military, Economics
[ShollaMC18]	Sahil Sholla, Roohie Naaz Mir, and Mohammad Ahsan Chishti. Docile Smart City Architecture: Moving Toward an Ethical Smart City. <i>International Journal</i> of Computing and Digital Systems, 7(03):167–174, 2018. ISSN 2210-142X. ETHICS4EU - Industry: Energy. Ethics: Autonomy, Privacy
[Thomson85]	Judith Jarvis Thomson. The trolley problem. The Yale Law Journal, 94(6):1395–1415, 1985. ETHICS4EU - Computing: AI. Ethics: Autonomy. Industry: Transport, Robotics
[WickramasingheTG12]	Nilmini Wickramasinghe, Indrit Troshani, and Steve Goldberg. Adoption of Pervasive e-Health Solutions: The Need for an Appropriate Regulatory Framework. In <i>AMCIS 2012 Proceedings</i> . 2012. ETHICS4EU - Industry: Health. Ethics: Autonomy, Privacy, Safety and Security

# 8.2 Bias, Fairness and Transparency

### References: Bias and Fairness and Transparency

[AivodjiETAL19]	Ulrich Aïvodji, Hiromi Arai, Olivier Fortineau, Sébastien Gambs, Satoshi Hara, and Alain Tapp. Fairwashing: the risk of rationalization. <i>arXiv preprint arXiv:1901.09749</i> , 2019. <b>ETHICS4EU - Computing: AI, Ethics: Bias</b>
[AlkhatiBernstein19]	Ali Alkhatib and Michael Bernstein. Street-level algorithms: A theory at the gaps between policy and decisions. In <i>Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems</i> , pages 1–13. 2019. ETHICS4EU - Computing: Programming. Ethics: Bias. Industry: Government
[CelisKSV19]	L Elisa Celis, Sayash Kapoor, Farnood Salehi, and Nisheeth Vishnoi. Controlling polarization in personalization: An algorithmic framework. In <i>Proceedings of the conference on fairness, accountability, and transparency</i> , pages 160–169. 2019. ETHICS4EU - Computing: Programming. Ethics: Bias
[FloresBL16]	Anthony W Flores, Kristin Bechtel, and Christopher T Lowenkamp. False positives, false negatives, and false analyses: A rejoinder to machine bias: There's software used across the country to predict future criminals. and it's biased against blacks. <i>Fed. Probation</i> , 80:38, 2016. ETHICS4EU - Computing: Programming. Ethics: Bias. Industry: Crime, law
[GonenGoldberg19]	Hila Gonen and Yoav Goldberg. Lipstick on a pig: Debiasing methods cover up systematic gender biases in word embeddings but do not remove them. In <i>Proceedings</i>

	of NAACL-HLT, pages 609–614. 2019. ETHICS4EU - Ethics: Bias.
[KleinbergMR17]	Jon Kleinberg, Sendhil Mullainathan, and Manish Raghavan. Inherent Trade-Offs in the Fair Determination of Risk Scores. In Christos H. Papadimitriou, editor, 8th Innovations in Theoretical Computer Science Conference (ITCS 2017), volume 67 of Leibniz International Proceedings in Informatics (LIPIcs), pages 43:1–43:23. Schloss Dagstuhl-Leibniz-Zentrum fuer Informatik, Dagstuhl, Germany, 2017. ISBN 978-3- 95977-029-3. ISSN 1868-8969. doi:10.4230/LIPIcs.ITCS.2017.43. ETHICS4EU - Ethics: Bias.
[ObermeyerPVM19]	Ziad Obermeyer, Brian Powers, Christine Vogeli, and Sendhil Mullainathan. Dissecting racial bias in an algorithm used to manage the health of populations. <i>Science</i> , 366(6464):447–453, 2019. ETHICS4EU - Computing: AI. Ethics: Bias
[PassiBarocas19]	Samir Passi and Solon Barocas. Problem formulation and fairness. In <i>Proceedings of the Conference on Fairness, Accountability, and Transparency</i> , pages 39–48. 2019. <b>ETHICS4EU - Ethics: Bias</b>
[RajiBuolamwini19]	Inioluwa Deborah Raji and Joy Buolamwini. Actionable auditing: Investigating the impact of publicly naming biased performance results of commercial AI products. In <i>Proceedings of the 2019 AAAI/ACM Conference on AI, Ethics, and Society</i> , pages 429–435. 2019. <b>ETHICS4EU - Ethics: Bias. Industry: Economics</b>
[RomanovETAL19]	Alexey Romanov, Maria De-Arteaga, Hanna Wallach, Jennifer Chayes, Chris- tian Borgs, Alexandra Chouldechova, Sahin Geyik, Krishnaram Kenthapadi, Anna Rumshisky, and Adam Kalai. What's in a name? reducing bias in bios without access to protected attributes. In <i>Proceedings of the 2019 Conference of the North</i> <i>American Chapter of the Association for Computational Linguistics: Human Lan-</i> <i>guage Technologies, Volume 1 (Long and Short Papers)</i> , pages 4187–4195. 2019. ETHICS4EU - Ethics: Bias.
[SelbstBFVV19]	Andrew D Selbst, Danah Boyd, Sorelle A Friedler, Suresh Venkatasubramanian, and Janet Vertesi. Fairness and abstraction in sociotechnical systems. In <i>Proceedings of the Conference on Fairness, Accountability, and Transparency</i> , pages 59–68. 2019. <b>ETHICS4EU - Ethics: Bias</b>
[Shah18]	<ul> <li>Hetan Shah. Algorithmic accountability. Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences, 376(2128):20170362, 2018.</li> <li>ETHICS4EU - Ethics: Bias.</li> </ul>
[Sharifi-MalvajerdiKR19]	Saeed Sharifi-Malvajerdi, Michael Kearns, and Aaron Roth. Average individual fairness: Algorithms, generalization and experiments. In <i>Advances in Neural Information Processing Systems</i> , pages 8240–8249. 2019. ETHICS4EU - Computing: Programming. Ethics: Bias

## 8.3 Discrimination and Identity

#### **References:** Discrimination and Identity

[Hutchinson01]	Jamie Hutchinson. Culture, communication, and an information age madonna. <i>IEEE Pro-fessional Communication Society Newsletter</i> , 45(3):1–7, 2001. <b>ETHICS4EU - Ethics: Discrimination</b>
[RajiSA21]	Inioluwa Deborah Raji, Morgan Klaus Scheuerman, and Razvan Amironesei. You can't sit with us: Exclusionary pedagogy in ai ethics education. In <i>Proceedings of the 2021 ACM Conference on Fairness, Accountability, and Transparency</i> , pages 515–525. 2021. ETHICS4EU - Industry: Academia. Ethics: Discrimination
[Schrier14]	<ul> <li>Karen Schrier. Learning, education and games. Volume one: Curricular and design considerations. Carnegie Mellon University, 2014.</li> <li>ETHICS4EU - Application Domain: Game Development. Ethics: Discrimination and Identity</li> </ul>
[SchrierGibson20]	Karen Schrier and David Gibson. <i>Ethics and game design: teaching values through play: teaching values through play.</i> IGI Global, 2010.

```
ETHICS4EU - Application Domain: Game Development. Ethics: Discrimination and Identity
```

## 8.4 Environment

#### **References:** Environment

[StrubellGMcC19] Emma Strubell, Ananya Ganesh, and Andrew McCallum. Energy and policy considerations for deep learning in nlp. In Proceedings of the 57th Annual Meeting of the Association for Computational Linguistics, pages 3645–3650. 2019. ETHICS4EU - Industry: Energy. Ethics: Environment

# 8.5 Intellectual Property

#### **References: Intellectual Property**

[Hollander03] Andrew Joseph Hollander. Patenting computer data structures: The ghost, the machine and the federal circuit. Duke Law & Technology Review, 2(1):1–13, 2003.
 ETHICS4EU - Ethics: Intellectual Property

#### 8.6 Privacy and Data Protection

- 8.6.1 Face Recognition
- 8.6.2 GDPR
- 8.6.3 Tracking

**References: Privacy and Data Protection** 

[AdnanAnwar20]

Muhammad Adnan and Kainat Anwar. Online learning amid the covid-19 pandemic: Students' perspectives. *Journal of Pedagogical Sociology and Psychology*, 2(1), 2020. doi:10.33902/JPSP.2020261309. ETHICS4EU - Industry: Academia. Ethics: Privacy

[Albrechtslund07]	Anders Albrechtslund. House 2.0: towards an ethics for surveillance in intelligent living and working environments. In <i>Proceedings of the sev-</i> <i>enth international conference of computer ethics philosophical enquiry, San</i> <i>Diego, USA: University of San Diego</i> , pages 7–16. 2007. ETHICS4EU - Ethics: Privacy and Data Protection
[Allen12]	Anita L Allen. What must we hide: The ethics of privacy and the ethos of disclosure. <i>St. Thomas Law Review</i> , 25(1):1, 2012. <b>ETHICS4EU - Ethics: Privacy and Data Protection</b>
[AndrejevicSelwyn20]	Mark Andrejevic and Neil Selwyn. Facial recognition technology in schools: Critical questions and concerns. <i>Learning, Media and Technology</i> , 45(2):115–128, 2020. <b>ETHICS4EU - Industry: Academia. Ethics: Privacy</b>
[Arendt98]	Hannah Arendt. The public and the private realm. In <i>The human condi-</i> <i>tion</i> , chapter B, pages 22 – 78. University of Chicago Press, 1998. <b>ETHICS4EU - Ethics: Privacy and Data Protection</b>
[AucejoFAZ20]	Esteban M Aucejo, Jacob French, Maria Paola Ugalde Araya, and Basit Zafar. The impact of covid-19 on student experiences and expectations: Evidence from a survey. <i>Journal of public economics</i> , 191:104271, 2020. ETHICS4EU - Industry: Academia. Ethics: Privacy
[AveryLiu11]	Matthew Avery and Dan Liu. Bringing smart pills to market: Fda regulation of ingestible drug/device combination products. <i>Food and drug law journal</i> , 66(3):329–352, 2011. ETHICS4EU - Industry: Health. Ethics: Autonomy, Privacy, Safety and Security
[Bensur14]	<ul> <li>Gariella E Bensur. Cover your webcam: The ecpa's lack of protection against software that could be watching you. <i>Cornell L. Rev.</i>, 100:1191, 2014.</li> <li>ETHICS4EU - Ethics: Privacy and Data Protection</li> </ul>
[CavoukianETAL09]	Ann Cavoukian et al. Privacy by design: The 7 foundational principles. Information and Privacy Commissioner of Ontario, Canada, 5, 2009. ETHICS4EU - Ethics: Privacy and Data Protection
[Cerf20]	Vinton G. Cerf. On the internet of medical things. Commun. ACM, 63(8):5, July 2020. ISSN 0001-0782. doi:10.1145/3406779. ETHICS4EU - Computing: IOT. Industry: Health. Ethics: Autonomy, Privacy, Safety and Security
[Chassang17]	Gauthier Chassang. The impact of the EU general data protection regulation on scientific research. <i>ecancermedicalscience</i> , 11, 2017. <b>ETHICS4EU - Ethics: Privacy and Data Protection</b>
[CoghlanMillerPaterson20]	Simon Coghlan, Tim Miller, and Jeannie Paterson. Good proctor or" big brother"? ai ethics and online exam supervision technologies. arXiv preprint arXiv:2011.07647, 2020. ETHICS4EU - Industry: Academia. Ethics: Privacy

[DeGagneMcGill10]	<ul> <li>Jennie C DeGagne and Barbareta A McGill. Ethical and legal issues in online education. Journal of eLearning and Online Teaching, 1(7):2–13, 2010.</li> <li>ETHICS4EU - Industry: Academia. Ethics: Privacy</li> </ul>
[Gonzalezi-MI-M20]	Carina S González-González, Alfonso Infante-Moro, and Juan C Infante-Moro. Implementation of e-proctoring in online teaching: A study about motivational factors. <i>Sustainability</i> , 12(8):3488, 2020. ETHICS4EU - Industry: Academia. Ethics: Privacy
[GordonGTOSSC21]	Damian Gordon, J Paul Gibson, Brendan Tierney, Dympna OSullivan, and Ioannis Stavrakakis. you must have your webcam on for the entire duration of the examination: The trade-off between the integrity of on-line assessments and the privacy rights of students. In <i>Moving technology ethics</i> <i>at the forefront of society, organisations and governments</i> , ETHICOMP, pages 65–75. Universidad de La Rioja, 2021. ISBN 788409286713. ETHICS4EU - Industry: Academia. Ethics: Privacy
[GruschkaMVJ18]	<ul> <li>Nils Gruschka, Vasileios Mavroeidis, Kamer Vishi, and Meiko Jensen. Privacy issues and data protection in big data: A case study analysis under gdpr. In 2018 IEEE International Conference on Big Data (Big Data), pages 5027–5033. IEEE, 2018.</li> <li>ETHICS4EU - Computing: AI. Ethics: Privacy and Data Protection</li> </ul>
[HaluzaJungwirth18]	Daniela Haluza and David Jungwirth. ICT and the future of healthcare: aspects of pervasive health monitoring. <i>Informatics for Health and Social</i> <i>care</i> , 43(1):1–11, 2018. ISSN 1753-8157. ETHICS4EU - Industry: Health. Ethics: Privacy
[HijmansRaab18]	<ul> <li>Hielke Hijmans and Charles D Raab. Ethical dimensions of the gdpr. Commentary on the General Data Protection Regulation, Cheltenham: Edward Elgar (2018, Forthcoming), 2018.</li> <li>ETHICS4EU - Ethics: Privacy and Data Protection</li> </ul>
[JacobsAbowd03]	<ul> <li>Anne R Jacobs and Gregory D Abowd. A framework for comparing perspectives on privacy and pervasive technologies. <i>IEEE Pervasive Computing</i>, 2(4):78–84, 2003. ISSN 1536-1268.</li> <li>ETHICS4EU - Ethics: Privacy and Data Protection</li> </ul>
[KnappSoylu13]	<ul> <li>Karin R Knapp and Ali Soylu. Technology: The good, the bad, and the ugly. how technology is affecting employee privacy, work life balance, and workplace relationships. <i>Mustang Journal of Management and Marketing</i>, 2:69–80, 2013.</li> <li>ETHICS4EU - Ethics: Privacy and Data Protection</li> </ul>
[KosinskiStillwellGraepel12]	Michal Kosinski, David Stillwell, and Thore Graepel. Private traits and attributes are predictable from digital records of human behavior. <i>Proceedings of the national academy of sciences</i> , 110(15):5802–5805, 2013. ETHICS4EU - Ethics: Privacy and Data Protection
[KrutkaSmitsWillhelm21]	Daniel G Krutka, Ryan M Smits, and Troy A Willhelm. Dont be evil: Should we use google in schools? <i>TechTrends</i> , pages 1–11, 2021. ETHICS4EU - Industry: Academia, Ethics: Privacy and Data Security

[Langenfeld20]	Thomas Langenfeld. Internet-based proctored assessment: Security and fairness issues. <i>Educational Measurement: Issues and Practice</i> , 39(3):24–27, 2020. ETHICS4EU - Industry: Academia. Ethics: Privacy
[LeinsCulnaneRubinstein20]	Kobi Leins, Chris Culnane, and Benjamin IP Rubinstein. Tracking, trac- ing, trust: contemplating mitigating the impact of covid-19 through tech- nological interventions. <i>The Medical Journal of Australia</i> , page 1, 2020. ETHICS4EU - Computing: Mobile. Ethics: Privacy and Data Protection, Industry: Health
[LoiHFSC19]	Michele Loi, Christoph Heitz, Andrea Ferrario, Anita Schmid, and Markus Christen. Towards an ethical code for data-based business. In 2019 6th Swiss Conference on Data Science (SDS), pages 6–12. IEEE, 2019. ISBN 1728131057. ETHICS4EU - Ethics: Privacy and Data Protection
[Lowman17]	Rodney L. Lowman. <i>Ethical and Legal Concerns in Internet-Based Testing</i> , page 350374. Educational and Psychological Testing in a Global Context. Cambridge University Press, 2017. doi:10.1017/9781316407547.015.
[MartaniGPCW20]	Andrea Martani, Lester Darryl Geneviève, Christopher Poppe, Carlo Casonato, and Tenzin Wangmo. Digital pills: a scoping review of the empirical literature and analysis of the ethical aspects. <i>BMC medical ethics</i> , 21(1):1–13, 2020. ETHICS4EU - Industry: Health. Ethics: Autonomy, Privacy, Safety and Security
[McCullaghBeattieNugent10]	<ul> <li>Paul J McCullagh, Mark Beattie, and Chris D Nugent. Pervasive technology to facilitate wellness. In <i>Proceedings of the 3rd International Conference on Pervasive Technologies Related to Assistive Environments</i>, pages 1–4. 2010.</li> <li>ETHICS4EU - Industry: Energy. Ethics: Autonomy, Privacy</li> </ul>
[MiltgenLancelotPeyrat-Guillard14]	Caroline Lancelot Miltgen and Dominique Peyrat-Guillard. Cultural and generational influences on privacy concerns: a qualitative study in seven European countries. <i>European Journal of Information Systems</i> , 23(2):103–125, mar 2014. ISSN 0960-085X. doi:10.1057/ejis.2013.17. <b>ETHICS4EU - Ethics: Privacy and Data Protection</b>
[Mittelstadt17]	Brent Mittelstadt. Ethics of the health-related internet of things: a nar- rative review. <i>Ethics and Information Technology</i> , 19(3):157–175, 2017. ETHICS4EU - Computing: IOT. Industry: Health. Ethics: Autonomy, Pri- vacy, Safety
[MyersFBH08]	Julie Myers, Thomas R Frieden, Kamal M Bherwani, and Kelly J Henning. Ethics in public health research: privacy and public health at risk: public health confidentiality in the digital age. <i>American Journal of public health</i> , 98(5):793–801, 2008. ETHICS4EU - Computing: IOT. Industry: Health. Ethics: Privacy
[PrabhuBirhane20]	Vinay Uday Prabhu and Abeba Birhane. Large image datasets: A pyrrhic win for computer vision? <i>arXiv preprint arXiv:2006.16923</i> , 2020.

	ETHICS4EU - Computing: AI. Ethics: Privacy and Data Protection. In- dustry: Health
[ReidenbergScaub18]	Joel R Reidenberg and Florian Schaub. Achieving big data privacy in education. <i>Theory and Research in Education</i> , 16(3):263–279, 2018. <b>ETHICS4EU - Industry: Academia. Ethics: Privacy</b>
[ShollaMC18]	<ul> <li>Sahil Sholla, Roohie Naaz Mir, and Mohammad Ahsan Chishti. Docile</li> <li>Smart City Architecture: Moving Toward an Ethical Smart City. International Journal of Computing and Digital Systems, 7(03):167–174, 2018.</li> <li>ISSN 2210-142X.</li> <li>ETHICS4EU - Industry: Energy. Ethics: Autonomy, Privacy</li> </ul>
[Slusky20]	Ludwig Slusky. Cybersecurity of online proctoring systems. Journal of In- ternational Technology and Information Management, 29(1):56–83, 2020. ETHICS4EU - Industry: Academia. Ethics: Privacy
[TenePolonetsky13]	Omer Tene and Jules Polonetsky. A theory of creepy: technology, privacy and shifting social norms. <i>Yale JL &amp; Tech.</i> , 16:59, 2013. ETHICS4EU - Ethics: Privacy and Data Protection
[ThornleyETAL15]	Clare Thornley, Anthony Watkinson, Dave Nicholas, Rachel Volentine, Hamid R Jamali, Eti Herman, Suzie Allard, Kenneth Levine, and Carol Tenopir. The role of trust and authority in the citation behaviour of researchers. <i>Information research</i> , 2015. <b>ETHICS4EU - Industry: Academia. Ethics: Professionalism</b>
[vanAlsenoy17]	Brendan Van Alsenoy. Reconciling the (extra) territorial reach of the gdpr with public international law. <i>KU Leuven</i> , 2017. <b>ETHICS4EU - Ethics: Privacy and Data Protection</b>
[Vatcha20]	Amy Vatcha. Workplace surveillance outside the workplace: An analysis of e-monitoring remote employees. <i>iSCHANNEL - Information Systems student journal (LSE)</i> , 15(1):4–9, 2020. <b>ETHICS4EU - Industry: Academia. Ethics: Privacy and Data Protection</b>
[WickramasingheTG12]	Nilmini Wickramasinghe, Indrit Troshani, and Steve Goldberg. Adoption of Pervasive e-Health Solutions: The Need for an Appropriate Regulatory Framework. In <i>AMCIS 2012 Proceedings</i> . 2012. ETHICS4EU - Industry: Health. Ethics: Autonomy, Privacy, Safety and Security
[WoldeabBrothen19]	Daniel Woldeab and Thomas Brothen. 21st century assessment: Online proctoring, test anxiety, and student performance. <i>International Journal of E-Learning &amp; Distance Education</i> , 34(1):1, 2019. <b>ETHICS4EU - Industry: Academia. Ethics: Privacy</b>
[WoodApthropeFeamster17]	Daniel Wood, Noah Apthorpe, and Nick Feamster. Cleartext data trans- missions in consumer iot medical devices. In <i>Proceedings of the 2017 Work-</i> <i>shop on Internet of Things Security and Privacy</i> , pages 7–12. 2017. ETHICS4EU - Computing: IOT. Industry: Health. Ethics: Privacy and Data Protection

# 8.7 Professionalism (in Computing Disciplines)

## **References:** Professionalism

[BrandenburgMinge19]	<ul> <li>Stefan Brandenburg and Michael Minge. Epos-an instrument for the assessment of the ethical position in software development. Theoretical Issues in Ergonomics Science, 20(2):153–165, 2019.</li> <li>ETHICS4EU - Computing: Software Engineering. Ethics: Professionalism</li> </ul>
[Bruckman20]	Amy Bruckman. 'Have you thought about' talking about ethical implica- tions of research. <i>Communications of the ACM</i> , 63(9):38–40, 2020. ETHICS4EU - Industry: Academia. Ethics: Professionalism
[Ioannidis14]	John PA Ioannidis. How to make more published research true. <i>PLoS medicine</i> , 11(10):e1001747, 2014. <b>ETHICS4EU - Industry: Academia. Ethics: Professionalism</b>
[Joyce06]	Donald Joyce. Raising awareness about academic integrity. In <i>ITICSE '06:</i> Proceedings of the 11th annual SIGCSE conference on Innovation and technol- ogy in computer science education, pages 350–350. ACM, New York, NY, USA, 2006. ISBN 1-59593-055-8. doi:http://doi.acm.org/10.1145/1140124.1140259. ETHICS4EU - Industry: Academia. Ethics: Professionalism
[Judy09]	Ken H Judy. Agile principles and ethical conduct. In 2009 42nd Hawaii International Conference on System Sciences, pages 1–8. IEEE, 2009. ETHICS4EU - Computing: Agile. Ethics: Professionalism, Technical Debt
[Littman21]	Michael L Littman. Collusion rings threaten the integrity of computer science research. <i>Communications of the ACM</i> , 64(6):43–44, 2021. <b>ETHICS4EU - Industry: Academia. Ethics: Professionalism</b>
[Morgan08]	David L Morgan. Snowball sampling. The SAGE encyclopedia of qualitative research methods, 2:815–816, 2008. ETHICS4EU - Industry: Academia. Ethics: Professionalism
[MorleyFKE20]	Jessica Morley, Luciano Floridi, Libby Kinsey, and Anat Elhalal. From what to how: an initial review of publicly available AI ethics tools, methods and research to translate principles into practices. <i>Science and engineering ethics</i> , 26(4):2141–2168, 2020. ISSN 1471-5546. <b>ETHICS4EU - Industry: Academia. Ethics: Professionalism</b>
[RandallFernandes91]	Donna M Randall and Maria F Fernandes. The social desirability response bias in ethics research. <i>Journal of business ethics</i> , 10(11):805–817, 1991. <b>ETHICS4EU - Industry: Academia. Ethics: Professionalism</b>
[Remtulla20]	<ul> <li>Ridhaa Remtulla. The present and future applications of technology in adapting medical education amidst the covid-19 pandemic. JMIR medical education, 6(2):e20190, 2020.</li> <li>ETHICS4EU - Industry: Academia. Ethics: Professionalism</li> </ul>
[SaumureGiven08]	Kristie Saumure and Lisa M Given. Convenience sample. The SAGE encyclo- pedia of qualitative research methods, page 125, 2008. ETHICS4EU - Industry: Academia. Ethics: Professionalism

[SimonSheard15]	Simon and Judy Sheard. Academic integrity and professional integrity in computing education. In <i>Proceedings of the 2015 ACM Conference on Innovation and Technology in Computer Science Education</i> , ITiCSE '15, pages 237–241. ACM, New York, NY, USA, 2015. ISBN 978-1-4503-3440-2. doi: 10.1145/2729094.2742633. ETHICS4EU - Industry: Academia. Ethics: Professionalism
[SkenderiLuma-OsmaniImeri20]	Muhamed Skenderi, Shkurte Luma-Osmani, and Florinda Imeri. Ethics in DevOps, the attitude of programmers towards it. <i>Journal of Natural Sciences and Mathematics of UT</i> , 5(9-10):69–85, 2020. ETHICS4EU - Computing: Software Engineering. Ethics: Professionalism
[Stacey20]	Anthony Stacey. Reimagining academic writing in academia 4.0 to de- incentivise plagiarism. <i>Electronic Journal of Business Research Methods</i> , 18(1), 2020. <b>ETHICS4EU - Industry: Academia. Ethics: Professionalism</b>
[Stodden20]	Victoria Stodden. The data science life cycle: a disciplined approach to advancing data science as a science. <i>Communications of the ACM</i> , 63(7):58–66, 2020. ETHICS4EU - Computing: Data Science. Ethics: Professionalism
[ThornleyETAL18]	Clare Victoria Thornley, Sinéad Murnane, Stephen McLoughlin, Marian Car- cary, Eileen Doherty, and Louise Veling. The role of ethics in developing professionalism within the global ict community. <i>International Journal of Hu- man Capital and Information Technology Professionals (IJHCITP)</i> , 9(4):56– 71, 2018. ETHICS4EU - Ethics: Digital Ethics, Professionalism
[Vakil20]	Sepehr Vakil. ive always been scared that someday im going to sell out: Exploring the relationship between political identity and learning in computer science education. <i>Cognition and Instruction</i> , 38(2):87–115, 2020. <b>ETHICS4EU - Industry: Academia. Ethics: Professionalism</b>
[Vardi18]	Moshe Y Vardi. Move Fast and Break Things. <i>COMMUNICATIONS OF</i> <i>THE ACM</i> , 61(9), 2018. doi:10.1145/3244026. <b>ETHICS4EU - Ethics: Digital Ethics, Prfessionalism</b>

#### 8.8 Safety and Security

#### **References: Safety and Security**

- [AveryLiu11] Matthew Avery and Dan Liu. Bringing smart pills to market: Fda regulation of ingestible drug/device combination products. *Food and drug law journal*, 66(3):329–352, 2011. ETHICS4EU - Industry: Health. Ethics: Autonomy, Privacy, Safety and Security
- [Cerf20] Vinton G. Cerf. On the internet of medical things. Commun. ACM, 63(8):5, July 2020. ISSN 0001-0782. doi:10.1145/3406779.
   ETHICS4EU Computing: IOT. Industry: Health. Ethics: Autonomy, Privacy, Safety and Security
- [Greengard21] Samuel Greengard. The worsening state of ransomware. Communications of the ACM, 64(4):15– 17, 2021.

 $\ensuremath{\mathbf{ETHICS4EU}}$  - Ethics: Safety and security

[Leveson20] Nancy Leveson. Are you sure your software will not kill anyone? Communications of the ACM, 63(2):25-28, 2020.
 ETHICS4EU - Computing: Software Engineering, Ethics: Safety and security

#### 8.9 Society

#### **References: Society**

- [AndersonRainie20] Janna Anderson and Lee Rainie. Many tech experts say digital disruption will hurt democracy. Technical report, Pew Research Center. Internet & Technology. Feb, 2020. ETHICS4EU Industry: Government. Ethics: Society
   [BarberaJNTB15] Pablo Barberá, John T. Jost, Jonathan Nagler, Joshua A. Tucker, and Richard Bonneau. Tweeting From Left to Right: Is Online Political Communication More Than an Echo Chamber? *Psychological Science*, 26(10):1531–1542, oct 2015. ISSN 14679280. doi:10.1177/0956797615594620. ETHICS4EU Industry: Government. Ethics: Society
- [HelbingFGHHVZZ19] Dirk Helbing, Bruno S Frey, Gerd Gigerenzer, Ernst Hafen, Michael Hagner, Yvonne Hofstetter, Jeroen Van Den Hoven, Roberto V Zicari, and Andrej Zwitter. Will democracy survive big data and artificial intelligence? In *Towards digital enlightenment*, pages 73–98. Springer, 2019. ETHICS4EU - Industry: Government. Ethics: Society
- [HongKim16]
   Sounman Hong and Sun Hyoung Kim. Political polarization on twitter: Implications for the use of social media in digital governments. *Government Information Quarterly*, 33(4):777–782, 2016. ISSN 0740-624X.
   ETHICS4EU Industry: Government. Ethics: Society

#### 8.10 Technical Debt

#### **References:** Technical Debt

[AvgeriouETAL20]	Paris C Avgeriou, Davide Taibi, Apostolos Ampatzoglou, Francesca Arcelli Fontana, Terese Besker, Alexandros Chatzigeorgiou, Valentina Lenarduzzi, Antonio Martini, Nasia Moschou, Ilaria Pigazzini, et al. An overview and comparison of technical debt measurement tools. <i>IEEE Software</i> , 2020. <b>ETHICS4EU - Ethics: Technical Debt</b>
[BognerVG21]	Justus Bogner, Roberto Verdecchia, and Ilias Gerostathopoulos. Characterizing technical debt and antipatterns in ai-based systems: A systematic mapping study. <i>arXiv preprint arXiv:2103.09783</i> , 2021. <b>ETHICS4EU - Ethics: Technical Debt</b>
[Chesterman21]	Simon Chesterman. 'Move Fast and Break Things': Law, Technology, and the Problem of Speed. Singapore Academy of Law Journal, 33:5–23, 2021. doi:10.2139/ssrn.3516032. ETHICS4EU - Industry: Law. Ethics: Technical Debt
[CodabuxWilliams13]	Zadia Codabux and Byron Williams. Managing technical debt: An industrial case study. In 2013 4th International Workshop on Managing Technical Debt (MTD), pages 8–15. IEEE, 2013. ETHICS4EU - Ethics: Technical Debt

[Judy09]	Ken H Judy. Agile principles and ethical conduct. In 2009 42nd Hawaii International Conference on System Sciences, pages 1–8. IEEE, 2009. ETHICS4EU - Computing: Agile. Ethics: Professionalism, Technical Debt
[LenarduzziBTMF21]	Valentina Lenarduzzi, Terese Besker, Davide Taibi, Antonio Martini, and Francesca Ar- celli Fontana. A systematic literature review on technical debt prioritization: Strategies, processes, factors, and tools. <i>Journal of Systems and Software</i> , 171:110827, 2021. <b>ETHICS4EU - Ethics: Technical Debt</b>
[LiAvgeriouLiang15]	Zengyang Li, Paris Avgeriou, and Peng Liang. A systematic mapping study on technical debt and its management. <i>Journal of Systems and Software</i> , 101:193–220, 2015. <b>ETHICS4EU - Ethics: Technical Debt</b>
[MeloFLS21]	Ana Melo, Roberta Fagundes, Valentina Lenarduzzi, and Williams Santos. Identification and measurement of technical debt requirements in software development: a systematic literature review. <i>arXiv preprint arXiv:2105.14232</i> , 2021. <b>ETHICS4EU - Ethics: Technical Debt</b>
[Petrozzino21]	Catherine Petrozzino. Who pays for ethical debt in ai? <i>AI and Ethics</i> , pages 1–4, 2021. <b>ETHICS4EU - Ethics: Technical Debt</b>
[RantalaMantyla20]	Leevi Rantala and Mika Mäntylä. Predicting technical debt from commit contents: reproduction and extension with automated feature selection. <i>Software Quality Journal</i> , 28(4):1551–1579, 2020. <b>ETHICS4EU - Ethics: Technical Debt</b>
[RiosDeMS18]	Nicolli Rios, Manoel Gomes de Mendonça Neto, and Rodrigo Oliveira Spínola. A ter- tiary study on technical debt: Types, management strategies, research trends, and base information for practitioners. <i>Information and Software Technology</i> , 102:117–145, 2018. <b>ETHICS4EU - Ethics: Technical Debt</b>
[SpinolaZVSS19]	Rodrigo O Spínola, Nico Zazworka, Antonio Vetro, Forrest Shull, and Carolyn Seaman. Understanding automated and human-based technical debt identification approaches-a two-phase study. <i>Journal of the Brazilian Computer Society</i> , 25(1):1–21, 2019. <b>ETHICS4EU - Ethics: Technical Debt</b>
[TamburriKLvV13]	Damian A Tamburri, Philippe Kruchten, Patricia Lago, and Hans van Vliet. What is social debt in software engineering? In 2013 6th International Workshop on Cooperative and Human Aspects of Software Engineering (CHASE), pages 93–96. IEEE, 2013. ETHICS4EU - Ethics: Technical Debt
[Vogel-HeuserBi21]	Birgit Vogel-Heuser and Fandi Bi. Interdisciplinary effects of technical debt in compa- nies with mechatronic products qualitative study. <i>Journal of Systems and Software</i> , 171:110809, 2021. ETHICS4EU - Ethics: Technical Debt
[Williams04]	S Mitchell Williams. An international investigation of associations between societal variables and the amount of disclosure on information technology and communication problems: The case of y2k. <i>The International Journal of Accounting</i> , 39(1):71–92, 2004. <b>ETHICS4EU - Ethics: Technical Debt</b>

# 9 Application Domains

# 9.1 Academia

## References: Academia

[AdnanAnwar20]	Muhammad Adnan and Kainat Anwar. Online learning amid the covid-19 pan- demic: Students' perspectives. <i>Journal of Pedagogical Sociology and Psychology</i> , 2(1), 2020. doi:10.33902/JPSP.2020261309. ETHICS4EU - Industry: Academia. Ethics: Privacy
[AndrejevicSelwyn20]	Mark Andrejevic and Neil Selwyn. Facial recognition technology in schools: Critical questions and concerns. <i>Learning, Media and Technology</i> , 45(2):115–128, 2020. <b>ETHICS4EU - Industry: Academia. Ethics: Privacy</b>
[AucejoFAZ20]	Esteban M Aucejo, Jacob French, Maria Paola Ugalde Araya, and Basit Zafar. The impact of covid-19 on student experiences and expectations: Evidence from a survey. <i>Journal of public economics</i> , 191:104271, 2020. ETHICS4EU - Industry: Academia. Ethics: Privacy
[Bruckman20]	Amy Bruckman. 'Have you thought about' talking about ethical implications of research. <i>Communications of the ACM</i> , 63(9):38–40, 2020. <b>ETHICS4EU - Industry: Academia. Ethics: Professionalism</b>
[CoghlanMillerPaterson20]	Simon Coghlan, Tim Miller, and Jeannie Paterson. Good proctor or" big brother"? ai ethics and online exam supervision technologies. arXiv preprint arXiv:2011.07647, 2020. ETHICS4EU - Industry: Academia. Ethics: Privacy
[DeGagneMcGill10]	Jennie C DeGagne and Barbareta A McGill. Ethical and legal issues in online education. <i>Journal of eLearning and Online Teaching</i> , 1(7):2–13, 2010. <b>ETHICS4EU - Industry: Academia. Ethics: Privacy</b>
[Gonzalezi-MI-M20]	Carina S González-González, Alfonso Infante-Moro, and Juan C Infante-Moro. Implementation of e-proctoring in online teaching: A study about motivational factors. <i>Sustainability</i> , 12(8):3488, 2020. <b>ETHICS4EU - Industry: Academia. Ethics: Privacy</b>
[GordonGTOSSC21]	Damian Gordon, J Paul Gibson, Brendan Tierney, Dympna OSullivan, and Ioannis Stavrakakis. you must have your webcam on for the entire duration of the exami- nation: The trade-off between the integrity of on-line assessments and the privacy rights of students. In <i>Moving technology ethics at the forefront of society, organisa-</i> <i>tions and governments</i> , ETHICOMP, pages 65–75. Universidad de La Rioja, 2021. ISBN 788409286713. ETHICS4EU - Industry: Academia. Ethics: Privacy
[Ioannidis14]	John PA Ioannidis. How to make more published research true. <i>PLoS medicine</i> , 11(10):e1001747, 2014. ETHICS4EU - Industry: Academia. Ethics: Professionalism
[Joyce06]	Donald Joyce. Raising awareness about academic integrity. In <i>ITICSE '06: Proceedings of the 11th annual SIGCSE conference on Innovation and technology in computer science education</i> , pages 350–350. ACM, New York, NY, USA, 2006. ISBN 1-59593-055-8. doi:http://doi.acm.org/10.1145/1140124.1140259. ETHICS4EU - Industry: Academia. Ethics: Professionalism

[KrutkaSmitsWillhelm21]	Daniel G Krutka, Ryan M Smits, and Troy A Willhelm. Dont be evil: Should we use google in schools? <i>TechTrends</i> , pages 1–11, 2021. ETHICS4EU - Industry: Academia, Ethics: Privacy and Data Security
[Langenfeld20]	Thomas Langenfeld. Internet-based proctored assessment: Security and fairness issues. <i>Educational Measurement: Issues and Practice</i> , 39(3):24–27, 2020. <b>ETHICS4EU - Industry: Academia. Ethics: Privacy</b>
[LarsonMiller18]	David K Larson and Keith W Miller. Action ethics: testing and data analysis. $ACM$ Inroads, 9(1):34–37, 2018. ISSN 2153-2184.
[Littman21]	Michael L Littman. Collusion rings threaten the integrity of computer science research. <i>Communications of the ACM</i> , 64(6):43–44, 2021. <b>ETHICS4EU - Industry: Academia. Ethics: Professionalism</b>
[Lowman17]	Rodney L. Lowman. <i>Ethical and Legal Concerns in Internet-Based Testing</i> , page 350374. Educational and Psychological Testing in a Global Context. Cambridge University Press, 2017. doi:10.1017/9781316407547.015.
[Morgan08]	<ul> <li>David L Morgan. Snowball sampling. The SAGE encyclopedia of qualitative research methods, 2:815–816, 2008.</li> <li>ETHICS4EU - Industry: Academia. Ethics: Professionalism</li> </ul>
[MorleyFKE20]	Jessica Morley, Luciano Floridi, Libby Kinsey, and Anat Elhalal. From what to how: an initial review of publicly available AI ethics tools, methods and research to translate principles into practices. <i>Science and engineering ethics</i> , 26(4):2141–2168, 2020. ISSN 1471-5546. <b>ETHICS4EU - Industry: Academia. Ethics: Professionalism</b>
[RajiSA21]	<ul> <li>Inioluwa Deborah Raji, Morgan Klaus Scheuerman, and Razvan Amironesei. You can't sit with us: Exclusionary pedagogy in ai ethics education. In <i>Proceedings of the 2021 ACM Conference on Fairness, Accountability, and Transparency</i>, pages 515–525. 2021.</li> <li>ETHICS4EU - Industry: Academia. Ethics: Discrimination</li> </ul>
[RandallFernandes91]	Donna M Randall and Maria F Fernandes. The social desirability response bias in ethics research. <i>Journal of business ethics</i> , 10(11):805–817, 1991. <b>ETHICS4EU - Industry: Academia. Ethics: Professionalism</b>
[ReidenbergScaub18]	Joel R Reidenberg and Florian Schaub. Achieving big data privacy in education. Theory and Research in Education, 16(3):263–279, 2018. ETHICS4EU - Industry: Academia. Ethics: Privacy
[Remtulla20]	<ul> <li>Ridhaa Remtulla. The present and future applications of technology in adapting medical education amidst the covid-19 pandemic. JMIR medical education, 6(2):e20190, 2020.</li> <li>ETHICS4EU - Industry: Academia. Ethics: Professionalism</li> </ul>
[SaumureGiven08]	Kristie Saumure and Lisa M Given. Convenience sample. The SAGE encyclopedia of qualitative research methods, page 125, 2008. ETHICS4EU - Industry: Academia. Ethics: Professionalism
[SimonSheard15]	Simon and Judy Sheard. Academic integrity and professional integrity in com- puting education. In <i>Proceedings of the 2015 ACM Conference on Innovation and</i> <i>Technology in Computer Science Education</i> , ITiCSE '15, pages 237–241. ACM, New

	York, NY, USA, 2015. ISBN 978-1-4503-3440-2. doi:10.1145/2729094.2742633. ETHICS4EU - Industry: Academia. Ethics: Professionalism
[Slusky20]	Ludwig Slusky. Cybersecurity of online proctoring systems. Journal of International Technology and Information Management, 29(1):56–83, 2020. ETHICS4EU - Industry: Academia. Ethics: Privacy
[Stacey20]	Anthony Stacey. Reimagining academic writing in academia 4.0 to de-incentivise plagiarism. <i>Electronic Journal of Business Research Methods</i> , 18(1), 2020. <b>ETHICS4EU - Industry: Academia. Ethics: Professionalism</b>
[ThornleyETAL15]	<ul> <li>Clare Thornley, Anthony Watkinson, Dave Nicholas, Rachel Volentine, Hamid R</li> <li>Jamali, Eti Herman, Suzie Allard, Kenneth Levine, and Carol Tenopir. The role of trust and authority in the citation behaviour of researchers. <i>Information research</i>, 2015.</li> <li>ETHICS4EU - Industry: Academia. Ethics: Professionalism</li> </ul>
[Vakil20]	Sepehr Vakil. ive always been scared that someday im going to sell out: Exploring the relationship between political identity and learning in computer science education. <i>Cognition and Instruction</i> , 38(2):87–115, 2020. ETHICS4EU - Industry: Academia. Ethics: Professionalism
[Vatcha20]	<ul> <li>Amy Vatcha. Workplace surveillance outside the workplace: An analysis of e-monitoring remote employees. <i>iSCHANNEL</i> - <i>Information Systems student journal</i> (<i>LSE</i>), 15(1):4–9, 2020.</li> <li>ETHICS4EU - Industry: Academia. Ethics: Privacy and Data Protection</li> </ul>
[WoldeabBrothen19]	<ul> <li>Daniel Woldeab and Thomas Brothen. 21st century assessment: Online proctoring, test anxiety, and student performance. International Journal of E-Learning &amp; Distance Education, 34(1):1, 2019.</li> <li>ETHICS4EU - Industry: Academia. Ethics: Privacy</li> </ul>

## 9.2 Crime, law and policing

#### References: Crime

- [Chesterman21] Simon Chesterman. 'Move Fast and Break Things': Law, Technology, and the Problem of Speed. Singapore Academy of Law Journal, 33:5–23, 2021. doi:10.2139/ssrn.3516032. ETHICS4EU - Industry: Law. Ethics: Technical Debt
- [FloresBL16] Anthony W Flores, Kristin Bechtel, and Christopher T Lowenkamp. False positives, false negatives, and false analyses: A rejoinder to machine bias: There's software used across the country to predict future criminals. and it's biased against blacks. *Fed. Probation*, 80:38, 2016.
   ETHICS4EU Computing: Programming. Ethics: Bias. Industry: Crime, law

#### 9.3 Economics and Finance

9.3.1 CryptoCurrencies

### 9.3.2 NFTs

#### **References: Economics and Finance**

[ShahriariShahriari17] Kyarash Shahriari and Mana Shahriari. IEEE standard review Ethically aligned design: A vision for prioritizing human well-being with artificial intelligence and autonomous systems. In 2017 IEEE Canada International Humanitarian Technology Conference (IHTC), pages 197–201. IEEE, 2017. ISBN 1509062645. ETHICS4EU - Computing: AI. Ethics: Autonomy. Industry: Military, Economics

#### 9.4 Energy, the environment and smart cities and buildings

#### **References: Energy and Environment**

[CallaghanClarkeChin09]	Vic Callaghan, Graham Clarke, and Jeannette Chin. Some socio-technical aspects of intelligent buildings and pervasive computing research. <i>Intelligent Buildings International</i> , 1(1):56–74, 2009. ISSN 1750-8975. <b>ETHICS4EU - Industry: Energy. Ethics: Autonomy</b>
[McCullaghBeattieNugent10]	Paul J McCullagh, Mark Beattie, and Chris D Nugent. Pervasive technology to facilitate wellness. In <i>Proceedings of the 3rd International Conference on</i> <i>Pervasive Technologies Related to Assistive Environments</i> , pages 1–4. 2010. ETHICS4EU - Industry: Energy. Ethics: Autonomy, Privacy
[ShollaMC18]	Sahil Sholla, Roohie Naaz Mir, and Mohammad Ahsan Chishti. Docile Smart City Architecture: Moving Toward an Ethical Smart City. <i>International Journal</i> of Computing and Digital Systems, 7(03):167–174, 2018. ISSN 2210-142X. ETHICS4EU - Industry: Energy. Ethics: Autonomy, Privacy
[StrubellGMcC19]	Emma Strubell, Ananya Ganesh, and Andrew McCallum. Energy and policy considerations for deep learning in nlp. In <i>Proceedings of the 57th Annual Meeting of the Association for Computational Linguistics</i> , pages 3645–3650. 2019. <b>ETHICS4EU - Industry: Energy. Ethics: Environment</b>

## 9.5 Gaming

#### **References: Video Games**

 [HeronBelford14] Michael Heron and Pauline Belford. "It's only a game" - ethics, empathy and identification in game morality systems. The Computer Games Journal, 3(1):34–53, 2014.
 ETHICS4EU - Computing: Game Development. Industry: Gaming. Ethics: Discrimination and Identity

### 9.6 Government and democracy

#### **References:** Government and Democracy

[AndersonRainie20]	Janna Anderson and Lee Rainie. Many tech experts say digital disruption will hurt democracy. Technical report, Pew Research Center. Internet & Technology. Feb, 2020. ETHICS4EU - Industry: Government. Ethics: Society
[BarberaJNTB15]	Pablo Barberá, John T. Jost, Jonathan Nagler, Joshua A. Tucker, and Richard Bonneau. Tweeting From Left to Right: Is Online Political Communication More Than an Echo Chamber? <i>Psychological Science</i> , 26(10):1531–1542, oct 2015. ISSN 14679280. doi:10.1177/0956797615594620. <b>ETHICS4EU - Industry: Government. Ethics: Society</b>
[HelbingFGHHVZZ19]	Dirk Helbing, Bruno S Frey, Gerd Gigerenzer, Ernst Hafen, Michael Hagner, Yvonne Hofstetter, Jeroen Van Den Hoven, Roberto V Zicari, and Andrej Zwitter. Will democracy survive big data and artificial intelligence? In <i>Towards digital enlightenment</i> , pages

	73–98. Springer, 2019. ETHICS4EU - Industry: Government. Ethics: Society
[HongKim16]	Sounman Hong and Sun Hyoung Kim. Political polarization on twitter: Implications for the use of social media in digital governments. <i>Government Information Quarterly</i> , 33(4):777–782, 2016. ISSN 0740-624X. <b>ETHICS4EU - Industry: Government. Ethics: Society</b>

# 9.7 Health

# References: Health

[AveryLiu11]	Matthew Avery and Dan Liu. Bringing smart pills to market: Fda regulation of in- gestible drug/device combination products. <i>Food and drug law journal</i> , 66(3):329– 352, 2011. ETHICS4EU - Industry: Health. Ethics: Autonomy, Privacy, Safety and Security
[Cerf20]	<ul> <li>Vinton G. Cerf. On the internet of medical things. Commun. ACM, 63(8):5, July 2020. ISSN 0001-0782. doi:10.1145/3406779.</li> <li>ETHICS4EU - Computing: IOT. Industry: Health. Ethics: Autonomy, Privacy, Safety and Security</li> </ul>
[HaluzaJungwirth18]	Daniela Haluza and David Jungwirth. ICT and the future of healthcare: aspects of pervasive health monitoring. <i>Informatics for Health and Social care</i> , 43(1):1–11, 2018. ISSN 1753-8157. <b>ETHICS4EU - Industry: Health. Ethics: Privacy</b>
[LeinsCulnaneRubinstein20]	<ul> <li>Kobi Leins, Chris Culnane, and Benjamin IP Rubinstein. Tracking, tracing, trust: contemplating mitigating the impact of covid-19 through technological interventions. <i>The Medical Journal of Australia</i>, page 1, 2020.</li> <li>ETHICS4EU - Computing: Mobile. Ethics: Privacy and Data Protection, Industry: Health</li> </ul>
[MartaniGPCW20]	Andrea Martani, Lester Darryl Geneviève, Christopher Poppe, Carlo Casonato, and Tenzin Wangmo. Digital pills: a scoping review of the empirical literature and analysis of the ethical aspects. <i>BMC medical ethics</i> , 21(1):1–13, 2020. <b>ETHICS4EU - Industry: Health. Ethics: Autonomy, Privacy, Safety and Security</b>
[Mittelstadt17]	Brent Mittelstadt. Ethics of the health-related internet of things: a narrative review. <i>Ethics and Information Technology</i> , 19(3):157–175, 2017. <b>ETHICS4EU - Computing: IOT. Industry: Health. Ethics: Autonomy, Privacy, Safety</b>
[MyersFBH08]	<ul> <li>Julie Myers, Thomas R Frieden, Kamal M Bherwani, and Kelly J Henning. Ethics in public health research: privacy and public health at risk: public health confidentiality in the digital age. American Journal of public health, 98(5):793–801, 2008.</li> <li>ETHICS4EU - Computing: IOT. Industry: Health. Ethics: Privacy</li> </ul>
[ObermeyerPVM19]	Ziad Obermeyer, Brian Powers, Christine Vogeli, and Sendhil Mullainathan. Dissecting racial bias in an algorithm used to manage the health of populations. <i>Science</i> , 366(6464):447–453, 2019. <b>ETHICS4EU - Computing: AI. Ethics: Bias. Industry: Health</b>

[WickramasingheTG12]	Nilmini Wickramasinghe, Indrit Troshani, and Steve Goldberg. Adoption of Pervasive e-Health Solutions: The Need for an Appropriate Regulatory Framework. In <i>AMCIS 2012 Proceedings</i> . 2012. ETHICS4EU - Industry: Health. Ethics: Autonomy, Privacy, Safety and Security
[WoodApthropeFeamster17]	Daniel Wood, Noah Apthorpe, and Nick Feamster. Cleartext data transmissions in consumer iot medical devices. In <i>Proceedings of the 2017 Workshop on Internet of Things Security and Privacy</i> , pages 7–12. 2017. <b>ETHICS4EU - Computing: IOT. Industry: Health. Ethics: Privacy and Data Protection</b>

## 9.8 Military

#### **References:** Military

 [ShahriariShahriari17] Kyarash Shahriari and Mana Shahriari. IEEE standard review Ethically aligned design: A vision for prioritizing human well-being with artificial intelligence and autonomous systems. In 2017 IEEE Canada International Humanitarian Technology Conference (IHTC), pages 197–201. IEEE, 2017. ISBN 1509062645.
 ETHICS4EU - Computing: AI. Ethics: Autonomy. Industry: Military, Economics

## 9.9 Robotics and autonomous systems

#### References: Robotics and autonomous systems

[DennisFSW16]	Louise Dennis, Michael Fisher, Marija Slavkovik, and Matt Webster. Formal ver- ification of ethical choices in autonomous systems. <i>Robotics and Autonomous</i> <i>Systems</i> , 77:1–14, 2016. ETHICS4EU - Ethics: autonomy. Computing: Formal Methods. Industry: Robotics
[HolsteinDodig-Crnkovic18]	Tobias Holstein and Gordana Dodig-Crnkovic. Avoiding the intrinsic unfairness of the trolley problem. In <i>Proceedings of the International Workshop on Software</i> <i>Fairness</i> , pages 32–37. 2018. ETHICS4EU - Computing: AI. Ethics: Autonomy. Industry: Transport, Robotics
[HolsteinD-CP20]	Tobias Holstein, Gordana Dodig-Crnkovic, and Patrizio Pelliccione. Real-world ethics for self-driving cars. In <i>Proceedings of the ACM/IEEE 42nd International</i> <i>Conference on Software Engineering: Companion Proceedings</i> , pages 328–329. 2020. ETHICS4EU - Industry: Robotics
[Thomson85]	Judith Jarvis Thomson. The trolley problem. <i>The Yale Law Journal</i> , 94(6):1395–1415, 1985. ETHICS4EU - Computing: AI. Ethics: Autonomy. Industry: Transport, Robotics

# 9.10 Social Media

9.10.1 Fake News

### References: Social Media

[AldwairiAlwahedi18]	Monther Aldwairi and Ali Alwahedi. Detecting fake news in social media networks. <i>Procedia Computer Science</i> , 141:215–222, 2018. <b>ETHICS4EU - Industry: Social Media</b>
[AlhabashALK19]	Saleem Alhabash, Nasser Almutairi, Chen Lou, and Wonkyung Kim. Pathways to Virality: Psychophysiological Responses Preceding Likes, Shares, Comments, and Status Updates on Facebook. <i>Media Psychology</i> , 22(2):196–216, mar 2019. ISSN 15213269. doi:10.1080/15213269.2017.1416296. ETHICS4EU - Industry: Social Media
[AllcottGentzkow17]	Hunt Allcott and Matthew Gentzkow. Social Media and Fake News in the 2016 Election. <i>Journal of Economic Perspectives</i> , 31(2):211–236, 2017. doi:10.1257/jep.31.2.211. <b>ETHICS4EU - Industry: Social Media</b>
[AphiwongsophonChongstitvatana18]	Supanya Aphiwongsophon and Prabhas Chongstitvatana. Detecting fake news with machine learning method. In 2018 15th International Confer- ence on Electrical Engineering/Electronics, Computer, Telecommunica- tions and Information Technology (ECTI-CON), pages 528–531. IEEE, 2018. ETHICS4EU - Industry: Social Media
[BakshyMessingAdamic15]	Eytan Bakshy, Solomon Messing, and Lada A Adamic. Exposure to ideo- logically diverse news and opinion on Facebook. <i>Science</i> , 348(6239):1130– 1132, 2015. ISSN 0036-8075. ETHICS4EU - Industry: Social Media
[BeamHutchensHmielowski18]	Michael A. Beam, Myiah J. Hutchens, and Jay D. Hmielowski. Facebook news and (de)polarization: reinforcing spirals in the 2016 US election. <i>Information Communication and Society</i> , 21(7):940–958, jul 2018. ISSN 14684462. doi:10.1080/1369118X.2018.1444783. <b>ETHICS4EU - Industry: Social Media</b>
[ChorasETAL21]	Michał Choraś, Konstantinos Demestichas, Agata Giełczyk, Álvaro Her- rero, Paweł Ksieniewicz, Konstantina Remoundou, Daniel Urda, and Michał Woźniak. Advanced machine learning techniques for fake news (online disinformation) detection: A systematic mapping study. <i>Applied</i> <i>Soft Computing</i> , 101:107050, 2021. <b>ETHICS4EU - Industry: Social Media</b>
[CinelliDMGQS21]	Matteo Cinelli, Gianmarco De, Francisci Morales, Alessandro Galeazzi, Walter Quattrociocchi, and Michele Starnini. The echo chamber effect on social media. <i>Proceedings of the National Academy of Sciences</i> , 118(9), 2021. doi:https://doi.org/10.1073/pnas.2023301118. ETHICS4EU - Industry: Social Media

[Comlekcci19]	<ul> <li>Fatih Çömlekçi. Custodians of the internet: Platforms, content moderation, and the hidden decisions that shape social media. Communication Today, 10(1):165–166, 2019.</li> <li>ETHICS4EU - Industry: Social Media</li> </ul>
[ComunelloAnzera12]	<ul> <li>Francesca Comunello and Giuseppe Anzera. Will the revolution be tweeted? A conceptual framework for understanding the social media and the Arab Spring. <i>Islam and ChristianMuslim Relations</i>, 2012. doi: 10.1080/09596410.2012.712435.</li> <li>ETHICS4EU - Industry: Social Media</li> </ul>
[DelVicarioZCSQ17]	Michela Del Vicario, Fabiana Zollo, Guido Caldarelli, Antonio Scala, and Walter Quattrociocchi. Mapping social dynamics on Facebook: The Brexit debate. <i>Social Networks</i> , 50:6–16, 2017. ISSN 0378-8733. doi: https://doi.org/10.1016/j.socnet.2017.02.002. ETHICS4EU - Industry: Social Media
[FaddoulChaslotFarid20]	Marc Faddoul, Guillaume Chaslot, and Hany Farid. A Longitudinal Analysis of YouTube's Promotion of Conspiracy Videos. arXiv preprint arXiv:2003.03318, 2020. ETHICS4EU - Industry: Social Media
[FerraraVDMF16]	Emilio Ferrara, Onur Varol, Clayton Davis, Filippo Menczer, and Alessandro Flammini. The rise of social bots. <i>Communications of the</i> <i>ACM</i> , 59(7):96–104, 2016. ISSN 0001-0782. ETHICS4EU - Industry: Social Media
[Finocchiaro81]	Maurice A Finocchiaro. Fallacies and the evaluation of reasoning. Amer- ican Philosophical Quarterly, 18(1):13–22, 1981. ETHICS4EU - Industry: Social Media
[FrangonikolopoulosChapsos12]	Christos A Frangonikolopoulos and Ioannis Chapsos. Explaining the role and the impact of the social media in the Arab Spring. <i>Global Media</i> <i>Journal: Mediterranean Edition</i> , 7(2), 2012. ISSN 1450-4154. ETHICS4EU - Industry: Social Media
[Gerrard19]	Ysabel Gerrard. Behind the screen: Content moderation in the shadows of social media, 2019. ETHICS4EU - Industry: Social Media
[GrinbergJFS-TL19]	Nir Grinberg, Kenneth Joseph, Lisa Friedland, Briony Swire-Thompson, and David Lazer. Fake news on Twitter during the 2016 U.S. presidential election. <i>Science</i> , 363(6425):374–378, 2019. <b>ETHICS4EU - Industry: Social Media</b>
[GroverKDJ19]	Purva Grover, Arpan Kumar Kar, Yogesh K Dwivedi, and Marijn Janssen. Polarization and acculturation in us election 2016 outcomes- can twitter analytics predict changes in voting preferences. <i>Technological Forecasting and Social Change</i> , 145:438–460, 2019. ETHICS4EU - Industry: Social Media
[JohnsonNHSvV20]	Benjamin K. Johnson, Rachel L. Neo, Marieke E.M. Heijnen, Lotte Smits, and Caitrina van Veen. Issues, involvement, and influence: Ef- fects of selective exposure and sharing on polarization and participation.

	Computers in Human Behavior, 104:106155, mar 2020. ISSN 07475632. doi:10.1016/j.chb.2019.09.031. ETHICS4EU - Industry: Social Media
[KotonyaToni19]	Neema Kotonya and Francesca Toni. Gradual argumentation evaluation for stance aggregation in automated fake news detection. In <i>Proceedings</i> of the 6th Workshop on Argument Mining, pages 156–166. 2019. ETHICS4EU - Industry: Social Media
[LazerETAL18]	<ul> <li>David Lazer, Matthew Baum, Yochai Benkler, Adam Berinsky, Kelly Greenhill, Filippo Menczer, Miriam Metzger, Brendan Nyhan, Gordon Pennycook, and David Rothschild. The Science of Fake News: Addressing Fake News Requires a Multidisciplinary Effort. Science, 359(8), 2018.</li> <li>ETHICS4EU - Industry: Social Media</li> </ul>
[Leerssen15]	Patrick Leerssen. Cut Out By The Middle Man: The Free Speech Impli- cations Of Social Network Blocking and Banning In The EU. J. Intell. Prop. Info. Tech. & Elec. Com. L., 6:99, 2015. ETHICS4EU - Industry: Social Media
[LererPeysakhovich19]	<ul> <li>Adam Lerer and Alexander Peysakhovich. Learning existing social conventions via observationally augmented self-play. In <i>Proceedings of the 2019 AAAI/ACM Conference on AI, Ethics, and Society</i>, pages 107–114.</li> <li>2019.</li> <li>ETHICS4EU - Industry: Social Media</li> </ul>
[Levy21]	<ul> <li>Ro'ee Levy. Social media, news consumption, and polarization: Evidence from a field experiment. American Economic Review, 111(3):831–870, 2021. ISSN 0002-8282.</li> <li>ETHICS4EU - Industry: Social Media</li> </ul>
[PennycookRand21]	Gordon Pennycook and David G Rand. The psychology of fake news. Trends in cognitive sciences, 2021. ETHICS4EU - Industry: Social Media
[RossRCCKW17]	<ul> <li>Björn Ross, Michael Rist, Guillermo Carbonell, Benjamin Cabrera, Nils Kurowsky, and Michael Wojatzki. Measuring the reliability of hate speech annotations: The case of the european refugee crisis. arXiv preprint arXiv:1701.08118, 2017.</li> <li>ETHICS4EU - Industry: Social Media</li> </ul>
[Spence20]	Edward Howlett Spence. The sixth estate: tech media corruption in the age of information. Journal of Information, Communication and Ethics in Society, 2020. ISSN 1477-996X. ETHICS4EU - Industry: Social Media
[Spohr17]	Dominic Spohr. Fake news and ideological polarization: Filter bub- bles and selective exposure on social media. <i>Business Information</i> <i>Review</i> , 34(3):150–160, aug 2017. ISSN 0266-3821. doi:10.1177/ 0266382117722446. ETHICS4EU - Industry: Social Media

[Srinivasan14]	Ramesh Srinivasan. What Tahrir Square has done for social media: A 2012 snapshot in the struggle for political power in Egypt. <i>The Information Society</i> , 30(1):71–80, 2014. ISSN 0197-2243. ETHICS4EU - Industry: Social Media
[Tufekci17]	Zeynep Tufekci. Twitter and tear gas: The power and fragility of net- worked protest. Yale University Press, 2017. ISBN 0300228171. ETHICS4EU - Industry: Social Media
[Tufekci18]	Zeynep Tufekci. How social media took us from Tahrir Square to Donald Trump. <i>MIT Technology Review</i> , 14:18, 2018. <b>ETHICS4EU - Industry: Social Media</b>
[Vallor16]	Shannon Vallor. <i>The Stanford Encyclopedia of Philosophy</i> , chapter Social Networking and Ethics. Stanford University, winter 201 edition, 2016.
[Villa-CoxKhudaBukhshCarley21	<ul> <li>Ramon Villa-Cox, Ashiqur R KhudaBukhsh, and Kathleen M Carley. Exploring Polarization of Users Behavior on Twitter During the 2019 South American Protests. arXiv preprint arXiv:2104.05611, 2021.</li> <li>ETHICS4EU - Industry: Social Media</li> </ul>
[VisserLawrenceReed20]	Jacky Visser, John Lawrence, and Chris Reed. Reason-checking fake news. <i>Communications of the ACM</i> , 63(11):38–40, 2020. <b>ETHICS4EU - Industry: Social Media</b>
[VosoughiRoyAral18]	Soroush Vosoughi, Deb Roy, and Sinan Aral. The spread of true and false news online. <i>Science</i> , 359(6380):1146–1151, 2018. doi:10.1126/science. aap9559. <b>ETHICS4EU - Industry: Social Media</b>
[WolfsfeldSegevSheafer13]	Gadi Wolfsfeld, Elad Segev, and Tamir Sheafer. Social Media and the Arab Spring: Politics Comes First. <i>The International Journal of</i> <i>Press/Politics</i> , 18(2):115–137, 2013. doi:10.1177/1940161212471716. ETHICS4EU - Industry: Social Media
9.11 Transport	
9.11.1 Avionics	
9.11.2 Automobile	
References: Transport	
	Elaine Englehardt, Patricia H Werhane, and Lisa H Newton. Leadership, engineering and ethical clashes at boeing. <i>Science and engineering ethics</i> , 27(1):1–17, 2021. ETHICS4EU - Industry: Transport
	Joseph Herkert, Jason Borenstein, and Keith Miller. The boeing 737 max: tessons for engineering ethics. <i>Science and engineering ethics</i> , 26(6):2957–2974,

ETHICS4EU - Industry: Transport

2020.

[HolsteinDodig-Crnkovic18]	<ul> <li>Tobias Holstein and Gordana Dodig-Crnkovic. Avoiding the intrinsic unfairness of the trolley problem. In <i>Proceedings of the International Workshop on Software Fairness</i>, pages 32–37. 2018.</li> <li>ETHICS4EU - Computing: AI. Ethics: Autonomy. Industry: Transport, Robotics</li> </ul>
[Mansouri16]	Nazanin Mansouri. A case study of volkswagen unethical practice in diesel emission test. International Journal of Science and Engineering Applications, 5(4):211–216, 2016. ETHICS4EU - Industry: Transport
[Wolf16]	Marilyn Wolf. Embedded software in crisis. <i>Computer</i> , 49(1):88–90, 2016. <b>ETHICS4EU - Industry: Transport</b>

### 9.12 Virtual Reality

#### **References: Virtual Reality**

[MadaryMetzinger16] Michael Madary and Thomas K Metzinger. Real virtuality: a code of ethical conduct. recommendations for good scientific practice and the consumers of vr-technology. Frontiers in Robotics and AI, 3:3, 2016. ETHICS4EU - Industry: Virtual Reality

# **10** Teaching Approaches

## **10.1** Teaching Miscellaneous

#### **References: Teaching Miscellaneous**

- Yeslam Al-Saggaf, Oliver K Burmeister, and Michael Schwartz. Qualifications and ethics education: the views of ICT professionals. Australasian Journal of Information Systems, 21, 2017.
- [2] Marina Umaschi Bers. Kaleidostories: Sharing stories across the world in a constructionist virtual community for learning. *Convergence*, 9(2):54–83, 2003.
- [3] Laura Ferrarello. Social awareness in design & engineering education and practice: the value of ethics in postgraduate education. In DS 95: Proceedings of the 21st International Conference on Engineering and Product Design Education (E&PDE 2019), University of Strathclyde, Glasgow. 12th-13th September 2019, 2019.
- [4] Casey Fiesler. Ethical speculation in the computing classroom. In 2021 Conference on Research in Equitable and Sustained Participation in Engineering, Computing, and Technology (RESPECT), pages 1–1. IEEE, 2021.
- [5] Mikey Goldweber, Renzo Davoli, Joyce Currie Little, Charles Riedesel, Henry Walker, Gerry Cross, and Brian R. Von Konsky. Enhancing the social issues components in our computing curriculum: Computing for the social good. ACM Inroads, 2(1):64–82, 2011.
- [6] Debora Gottardello and Maria del Mar Pàmies. Business school professors' perception of ethics in education in Europe. Sustainability (Switzerland), 11(3), 2019.
- [7] Daniel W. Knight, Angela R. Bielefeldt, Chris Swan, Nathan E. Canney, and Madeline Polmear. Exploring the range of methods used to assess engineering students' education on ethical and societal impact issues. *Proceedings - Frontiers in Education Conference, FIE*, 2018-Octob:1–7, 2019.

- [8] David K Larson and Keith W Miller. Action ethics: testing and data analysis. ACM Inroads, 9(1):34–37, 2018.
- [9] Li-Jen Yu Lester and Yaprak Dalat-Ward. Teaching Professionalism and Ethics in Information Technology by Deliberative Dialogue. *Information Systems Education Journal*, 17(1):4, 2019.
- [10] Diana Adela Martin, Eddie Conlon, and Brian Bowe. The role of role-play in student awareness of the social dimension of the engineering profession. *European Journal of Engineering Education*, 44(6):882–905, 2019.
- [11] Rafael Miñano, Ángel Uruburu, Ana Moreno-Romero, and Diego Pérez-López. Strategies for Teaching Professional Ethics to IT Engineering Degree Students and Evaluating the Result. *Science and Engineering Ethics*, 23(1):263–286, 2017.
- [12] Barbara Moskal, Keith Miller, and L. A.Smith King. Grading essays in computer ethics: Rubrics considered helpful. SIGCSE Bulletin (Association for Computing Machinery, Special Interest Group on Computer Science Education), pages 101–105, 2002.
- [13] Ciaran O'Leary, Deirdre Lawless, Damian Gordon, Dave Carroll, Fred Mtenzi, and Michael Collins. 3d alignment in the adaptive software engineering curriculum. In *Proceedings. Frontiers in Education. 36th Annual Conference*, pages 1–6. IEEE, 2006.
- [14] Don Passey. Computer science (CS) in the compulsory education curriculum: Implications for future research. Education and Information Technologies, 22(2):421–443, 2017.
- [15] Anastasia Pease and Robert Baker. Union College's Rapaport Everyday Ethics Across the Curriculum Initiative. *Teaching Ethics*, 9(2):5–24, 2009.
- [16] Michael J Quinn. Case-based analysis: A practical tool for teaching computer ethics. In Proceedings of the 37th SIGCSE technical symposium on Computer science education, pages 520–524, 2006.
- [17] Michael J Quinn. On teaching computer ethics within a computer science department. Science and Engineering Ethics, 12(2):335–343, 2006.
- [18] Sue Sentance and Andrew Csizmadia. Computing in the curriculum: Challenges and strategies from a teacher's perspective. *Education and Information Technologies*, 22(2):469–495, 2017.
- [19] Robin Sexton and Benjamin Garner. Student Perspectives of Effective Pedagogical Strategies for Teaching Ethics. Marketing Education Review, 30(2):132–137, 2020.
- [20] Hong Shen, Wesley Deng, Aditi Chattopadhyay, Steven Wu, Xu Wang, and Haiyi Zhu. Value Cards: An Educational Toolkit for Teaching Social Impacts of Machine Learning through Deliberation. arXiv preprint arXiv:2010.11411, 2020.
- [21] Ioannis Stavrakakis, Damian Gordon, Brendan Tierney, Anna Becevel, Emma Murphy, Gordana Dodig-Crnkovic, Radu Dobrin, Viola Schiaffonati, Cristina Pereira, Svetlana Tikhonenko, J. Paul Gibson, Stephane Maag, Francesco Agresta, Andrea Curley, Michael Collins, and Dympna O'Sullivan. The teaching of computer ethics on computer science and related degree programmes: A european survey. *International Journal* of Ethics Education, pages 1–29, October 2021.
- [22] Dee A. B. Weikle. Teaching the code and ethics in computing. ACM SIGCAS Computers and Society, 48(1):9–11, 2018.

#### 10.2 Gamification

#### **References:** Gamification

- [1] Andre L Nel and Johnson Carroll. Ethics assessment via game play? In 2017 IEEE Global Engineering Education Conference (EDUCON), pages 660–666. IEEE, 2017.
- [2] Karen Schrier. Learning, education and games. Volume one: Curricular and design considerations. Carnegie Mellon University, 2014.
- [3] Karen Schrier. Designing role-playing video games for ethical thinking. *Educational Technology Research* and Development, 65(4):831–868, 2017.
- [4] Karen Schrier and David Gibson. *Ethics and game design: teaching values through play: teaching values through play.* IGI Global, 2010.

#### 10.3 Learner Centered

#### **References: Learner Centered**

 Anne G Applin. A learner-centered approach to teaching ethics in computing. In ACM SIGCSE Bulletin, volume 38, pages 530–534. ACM, 2006.

#### 10.4 Multidisciplinary

#### **References:** MultiDisciplinary

- Randy Connolly. Why computing belongs within the social sciences. Communications of the ACM, 63(8):54– 59, 2020.
- [2] Batya Friedman and Peter H Kahn. Educating computer scientists: Linking the social and the technical. Commun. ACM, 37(1):64–70, 1994.
- [3] Johannes Himmelreich. Ethics of technology needs more political philosophy. Communications of the ACM, 63(1):33–35, 2019.
- [4] Deborah Johnson. Who should teach computer ethics and computers & society? ACM SIGCAS Computers and Society, 24(2):6–13, 1994.
- [5] A.H. McGowan. Teaching science and ethics to undergraduates: A multidisciplinary approach. Science and Engineering Ethics, pages 1–9, 2012.
- [6] Rob Reich, Mehran Sahami, Jeremy M. Weinstein, and Hilary Cohen. Teaching computer ethics: A deeply multidisciplinary approach. Annual Conference on Innovation and Technology in Computer Science Education, ITiCSE, pages 296–302, 2020.

#### **10.5** Science fiction

#### **References: Science fiction**

- Emanuelle Burton, Judy Goldsmith, and Nicholas Mattei. How to teach computer ethics through science fiction. Communications of the ACM, 61(8):54–64, 2018.
- [2] Emanuelle Burton, Judy Goldsmith, and Nicholas Mattei. Teaching ai ethics using science fiction. In Workshops at the Twenty-Ninth AAAI Conference on Artificial Intelligence, 2015.

## 10.6 Teaching Digital Ethics - Weaving, integrating and embedding

#### References: Weaving and integrating and embedding

- Florence Appel. Including the social and ethical implications of computing in the computer science curriculum. ACM SIGCAS Computers and Society, 28(2):56–57, 1998.
- [2] Jo Bates, David Cameron, Alessandro Checco, Paul Clough, Frank Hopfgartner, Suvodeep Mazumdar, Laura Sbaffi, Peter Stordy, and Antonio de la Vega de León. Integrating FATE/critical data studies into data science curricula: where are we going and how do we get there? In Proceedings of the 2020 Conference on Fairness, Accountability, and Transparency, pages 425–435, 2020.
- [3] Angela R Bielefeldt, Madeline Polmear, Daniel Knight, Christopher Swan, and Nathan Canney. Ethics Across the Curriculum? Integrating Ethics and Societal Impact Topics into Core Engineering Courses. Proceedings of the ASEE American Society for Engineering Education Rocky Mountain Section Conference, 1(September):1–15, 2017.
- [4] Andrej Brodnik and Cathy Lewin. Guest editorial for special section on a new culture of learning: Developing computing in the curriculum and advancing digital pedagogy. *Education and Information Technologies*, 22(2):417–420, 2017.
- [5] Terrell Ward Bynum. Computer ethics in the computer science curriculum. In *Teaching computer ethics*, pages 12–40. Southern Connecticut State University, 1992.
- [6] A. Curley, D. Gordon, I. Stavrakakis, A. Becevel, J.P. Gibson, and D. O'Sullivan. Adaptable and reusable educational bricks for teaching computer science ethics. In *EDULEARN21 Proceedings*, 13th International Conference on Education and New Learning Technologies, page 1991. IATED, 5-6 July, 2021 2021.
- [7] Scott Dexter, Elizabeth Buchanan, Kellen Dins, Kenneth R. Fleischmann, and Keith Miller. Characterizing the need for graduate ethics education. SIGCSE 2013 - Proceedings of the 44th ACM Technical Symposium on Computer Science Education, pages 153–158, 2013.
- [8] J Paul Gibson, Yael Jacob, Damian Gordon, and Dympna OSullivan. Developing an educational brick for digital ethics. In *Moving technology ethics at the forefront of society, organisations and governments*, ETHICOMP, pages 29–37. Universidad de La Rioja, 2021.
- Richard G. Epstein. An ethics and security course for students in computer science and information technology. Proceedings of the Thirty-Seventh SIGCSE Technical Symposium on Computer Science Education, pages 535–537, 2007.
- [10] Ahmad Ghafarian. Integrating ethical issues into the undergraduate computer science curriculum. *Journal* of Computing Sciences in Colleges, 18(2):180–188, 2002.
- [11] Barbara J Grosz, David Gray Grant, Kate Vredenburgh, Jeff Behrends, Lily Hu, Alison Simmons, and Jim Waldo. Embedded EthiCS: Integrating Ethics across CS Education. Commun. ACM, 62(8):54–61, jul 2019.
- [12] Albert L Harris, Michael Lang, Dave Yates, and S E Kruck. Incorporating ethics and social responsibility in IS education. *Journal of Information Systems Education*, 22(3):1, 2019.
- [13] Chuck Huff and C Dianne Martin. Computing consequences: a framework for teaching ethical computing. Communications of the ACM, 38(12):75–84, 1995.
- [14] Jane Johnson. Teaching Ethics to Science Students: Challenges and a Strategy. In B. Selgelid, M. & Rappert, editor, *Education and Ethics in the Life Sciences: Strengthening the Prohibition of Biological Weapons*, Strengthening the Prohibition of Biological Weapons, pages 197–214. ANU Press, oct 2010.

- [15] Shalini Kesar. Including teaching ethics into pedagogy: preparing information systems students to meet global challenges of real business settings. ACM SIGCAS Computers and Society, 45(3):432–437, 2016.
- [16] Yana Kortsarts and Adam Fischbach. Incorporating professional ethics into an introductory computer science course. Journal of Computing Sciences in Colleges, 29(3):35–42, 2014.
- [17] Shreya Kumar and Nathaniel Kremer-Herman. Integrating Ethics Across Computing: An Experience Report of Three Computing Courses Engaging Ethics and Societal Impact through Roleplaying, Case Studies, and Service Learning. Proceedings - Frontiers in Education Conference, FIE, 2019-Octob, 2019.
- [18] Joyce Currie Little, Norbert J. Kubilus, Mary J. Granger, Susan K. Lippert, Roger Boyle, W. Michael McCracken, Jill Gerhardt-Powals, Grazyna Paliwoda, John Impagliazzo, Piotr Soja, and Carol Janik. Integrating professionalism and workplace issues into the computing and information technology curriculum. Annual Conference on Innovation and Technology in Computer Science Education, ITiCSE, Part F1291(4):106–120, 1999.
- [19] Jeffrey Saltz, Michael Skirpan, Casey Fiesler, Micha Gorelick, Tom Yeh, Robert Heckman, Neil Dewar, and Nathan Beard. Integrating ethics within machine learning courses. ACM Transactions on Computing Education (TOCE), 19(4):1–26, 2019.
- [20] Andrew Scott and Scott Barlowe. How software works: Computational thinking and ethics before CS1. Proceedings - Frontiers in Education Conference, FIE, 2016-Novem, 2016.
- [21] Michael Skirpan, Nathan Beard, Srinjita Bhaduri, Casey Fiesler, and Tom Yeh. Ethics education in context: A case study of novel ethics activities for the cs classroom. In Proceedings of the 49th ACM Technical Symposium on Computer Science Education, pages 940–945, 2018.
- [22] Michael Skirpan, Jacqueline Cameron, and Tom Yeh. Quantified self: An interdisciplinary immersive theater project supporting a collaborative learning environment for CS ethics. SIGCSE 2018 - Proceedings of the 49th ACM Technical Symposium on Computer Science Education, 2018-Janua:946–951, 2018.
- [23] Allen B Tucker. Computing curricula 1991. Communications of the ACM, 34(6):68-84, 1991.

# 11 Educational Brick Case Studies From The Popular Press

# 11.1 Foundations of Digital Ethics

- 1. AI ethics backed by Pope and tech giants in new plan. By Jen Copestake, Technology reporter, 28 February 2020. (Internet archive.)
- 2. Why some artificial intelligence is smart until its dumb. By Tom Siegfried, Knowable Magazine, August 2020. (Internet archive.)
- 3. Extreme Programming Creator Kent Beck: Tech Has a Compassion Deficit By Tatum Hunter, August 19, 2020 (Internet archive.)
- 4. The Top Five Ethical Concerns for the Tech Industry in 2020 By Katy Cook, katycook.net, 2020. (Internet archive.)
- 5. *How to anticipate if technologies will be used maliciously* By Tim Sandle, Digital Journal, Technology, August 2018 (Internet archive.)
- Silicon Valley Writes a Playbook to Help Avert Ethical Disasters By Arielle Pardes, Wired, August 2018 (Internet archive.)

- 7. A new toolkit to help tech companies be more ethical By Molly Wood, Marketplace Tech Blogs, September 2018 (Internet archive.)
- 8. *Reducing the carbon footprint of artificial intelligence* By Rob Matheson, MIT News, April 23, 2020. (Internet archive.)
- 9. Artificial intelligence is evolving all by itself By Edd Gent, AAAS Science, Apr. 13, 2020 (Internet archive.)
- 10. The Technology 202: IBM and Notre Dame team up on new tech ethics lab By Cat Zakrzewski, The Washington Post, July, 2020 (Internet archive.)
- 11. What data can't do By Hannah Fry, The New Yorker, March 2021 Internet archive.)

## 11.2 Smart Pills - IOT, Health and Privacy

- 1. The Potential and Perils of the IoT in Healthcare By Mark Stone, Security Intelligence, November 21, 2019. (Internet archive.)
- 2. Australia's First 'Virtual Hospital' Implements Caretaker Medical's Wireless Vital Signs Monitors for COVID-19 Remote Patient Monitoring and Reporting By Jeff Pompeo, April 2020. (Internet archive.)
- Major Cyberattacks On Healthcare Grew 63% in 2016 By Kelly Sheridan, Darkreading, December 2016. (Internet archive.)
- Hacked IV Pumps and Digital Smart Pens Can Lead to Data Breaches By Dawn Kawamoto, Darkreading, April 2017. (Internet archive.)
- 5. St. Jude admits security vulnerabilities in cardiac devices By Jessica Davis, January 2017, Healthcare news. (Internet archive.)
- Bluetooth-Related Flaws Threaten Dozens of Medical Devices By Lily Hay Newman, Wired, 20 Feb, 2020. (Internet archive.)
- 7. *Gut feeling: the swallowable gut sensor that could replace a colonoscopy*, By Buffy Gorrilla, January 2017, The Sydney Morning Herald. (Internet archive.)
- 8. Quelle éthique pour l'intelligence artificielle en santé? By juri-geek, the conversation, April 2018. ( Internet archive.)
- 9. FDA approves pill with sensor that digitally tracks if patients have ingested their medication By Sandy Wash, US-FDA Press release, November 2017 (Internet archive.)
- 10. Smart locks opened with nothing more than a MAC address By Charlie Osborne, ZDNet, August 2020. ( Internet archive.)
- 11. The Potential and Perils of the IoT in Healthcare By Mark Stone, Security Intelligence, November 21, 2019. (Internet archive.)
- 12. Artificial intelligence model detects asymptomatic Covid-19 infections through cellphone-recorded coughs By Jennifer Chu, MIT News, October 29, 2020 (Internet archive.)
- 13. St. Jude admits security vulnerabilities in cardiac devices By Jessica Davis, HealthCare IT News, January 10, 2017 (Internet archive.)
- 14. Hacked IV Pumps and Digital Smart Pens Can Lead to Data Breaches By Dawn Kawamoto, DarkReading, April, 2017 (Internet archive.)

- 15. Artificial intelligence produces data synthetically to help treat diseases like COVID-19 By Joonas Jalko, Aalto A?, June 2020 (Internet archive.)
- 16. *Gut feeling: the swallowable gut sensor that could replace a colonoscopy* By Buffy Gorrilla,Sunday Morning Herald, January 20, 2017 (Internet archive.)
- 17. Australias first virtual hospital for COVID-19 patients use Caretaker Medical wireless patient monitor for remote monitoring and reporting. By Caretaker medical, April 2020. (Internet archive.)
- 18. Blueprint for the perfect coronavirus app. By Felix Wrsten, ETH Zurich News, July 2020. (Internet archive.)
- Major Cyberattacks On Healthcare Grew 63% In 2016 By Kelly Sheridan, DarkReading, December 2016. (Internet archive.)
- 20. Smart Home Devices Can Reveal Behaviors Associated With Dementia By Michelle Hampson, IEEE Spectrum, June 2020 (Internet archive.)
- Quelle éthique pour lintelligence artificielle en santé ? By Chronique Juri Geek, The conversation, April 2018 (Internet archive.)
- 22. La santé connectée est-elle une bonne idée ? By Maddyness, March, 2020. (Internet archive.)
- 23. *HSE donates contact tracing app to global public health project* By Ciara O'Brien, The irish Times, July, 2020. (Internet archive.)
- 24. Apple warns iPhone 12 owners to keep them away from medical devices. By Anthony Cuthbertson, January 2021, The Independent. (Internet archive.)
- 25. Ingestibles / Les pilules intelligentes arrivent sur le march! By Mathieu Carlier, 2018, Le Blog Domotique (Internet archive.)
- This electronic pill can send Wi-Fi updates from your tummy for days. By Nsikan Akpan, February 2017, PBS. (Internet archive.)
- 27. More than half of medical devices found to have critical vulnerabilities. By Allison Murray, January 2022, ZDNET. (Internet archive.)

# 11.3 Software Certification, Accreditation and Testing - professional ethics for software engineering

- 1. Boeing 787s must be turned off and on every 51 days to prevent 'misleading data' being shown to pilots. US air safety bods call it 'potentially catastrophic' if reboot directive not implemented. By Gareth Corfield, The Register, 2 Apr 2020. (Internet archive.)
- Ethiopian Report on 737 Max Crash Blames Boeing. By Simon Marks and Abdi Latif Dahir, New York Times, March 9, 2020. (Internet archive.)
- 3. How the Boeing 737 Max Disaster Looks to a Software Developer. By Gregory Travis, IEEE Spectrum, 18 April 2019. (Internet archive.)
- 4. Volkswagen emissions scandal: mass lawsuit opens in Germany By Jasper Jolly, The Guardian, 30 Sep, 2019. (Internet archive.)
- 5. Boeings problem was not engineering. It was a loss of corporate empathy. By Gregory Travis, May 2019. (Internet archive.)

- 6. Why We Need to Address Ethical Issues In Software Engineering By Daniel Alcanja, Simple Programmer, October 9, 2019. (Internet archive.)
- 7. Post Office IT system that ruined lives 'still faulty', MPs told. By Brian Wheeler, BBC News, 10 March 2020. (Internet archive.)
- 8. Tech Ethics New Years Resolution: Dont Build Software You Will Regret. By Jennifer Riggins, The NewStack, 1 Jan 2019. (Internet archive.)
- 9. Ethical debt and the great online pivot By Samantha Ahern, wonkhe.com, April 2020. (Internet archive.)
- 10. IT professionals are to blame for robodebt What happened to ethics? By Craig McDonald, ACS Information Age, June 2020. (Internet archive.)
- 11. Q&A: What led to Boeings 737 MAX crisis By Dominic Gates, Seattle Times, Nov. 18, 2020 (Internet archive.)
- 12. Software bungle meant NHS Covid app failed to warn users to self-isolate By Tom Calver and Gabriel Pogrund, The Times, November 2020 (Internet archive.)
- 13. Flight in serious incident after every Miss on board assigned childs weight By PA, Irish Times, April 2021. (Internet archive.)

## 11.4 Introduction to Programming - Algorithmic (AI) Bias

- Machine Bias Theres software used across the country to predict future criminals. And its biased against blacks. By Julia Angwin, Jeff Larson, Surya Mattu and Lauren Kirchner, ProPublica, May 23, 2016. (Internet archive.)
- 2. A computer program used for bail and sentencing decisions was labeled biased against blacks. Its actually not that clear. By Sam Corbett-Davies, Emma Pierson, Avi Feller and Sharad Goel, The Washington Post, Oct. 17, 2016. (Internet archive.)
- 3. AI systems claiming to 'read' emotions pose discrimination risks. By Hannah Devlin, The Guardian, Sun 16 Feb 2020. (Internet archive.)
- 4. Are Your Algorithms Upholding Your Standards of Fairness? By Michael Li, Harvard Business Review, November 05, 2019. (Internet archive.)
- 5. Wrongfully Accused by an Algorithm By Kashmir Hill, NYT, June 2020. (Internet archive.)
- 6. Response: Racial and Gender bias in Amazon Rekognition Commercial AI System for Analyzing Faces. By Joy Buolamwini, Medium, January 2019. (Internet archive.)
- 7. Diversity in AI is not your problem, its hers. By Robert Munro, medium.com, Nov 12, 2019 (Internet archive.)
- 8. *Home Office agrees to scrap racist visa application algorithm.* By May Bulman, Social Affairs Correspondent, The Independent, August 2020. (Internet archive.)
- 9. The Ethical Engine: Integrating Ethical Design into Intro Computer Science By Evan Peck, medium.com, July 2017. (Internet archive.)
- 10. When algorithms define kids by postcode: UK exam results chaos reveal too much reliance on data analytics By Charlie Osborne for Between the Lines, ZDNET, August 2020. (Internet archive.)

- 11. A-Level calculations shine a spotlight on unfair algorithms By Cliff Sarans, Computer Weekly, August 2020. (Internet archive.)
- 12. ACM calls for governments and businesses to stop using facial recognition By Khari Johnson, Venture-Beat, June 2020. (Internet archive.)
- 13. AI researchers condemn predictive crime software, citing racial bias and flawed methods By Taylor Hatmaker, techCrunch, June 24, 2020 (Internet archive.)
- 14. *How our data encodes systematic racism* By Deborah Raji, MIT Technology review, December 2020 (Internet archive.)
- 15. A-Levels 2020: Who are the grade-adjusting algorithm's winners and losers? By Dominic Gilbert and Alex Clark, The Telegraph, 15 August 2020, (Internet archive.)
- 16. *How IBM Is Working Toward a Fairer AI* By Francesca Rossi, Harvard Business Review, November 05, 2020 (Internet archive.)
- 17. Researchers show that computer vision algorithms pretrained on ImageNet exhibit multiple, distressing biases By Kyle Wiggers, Vulture Beat, November 03, 2020 (Internet archive.)
- 18. Uber and Lyft pricing algorithms charge more in non-white areas By Donna Lu, New Scientist Technology, June 2020 (Internet archive.)
- 19. Nearly half of councils in Great Britain use algorithms to help make claims decisions By Sarah Marsh and Niamh McIntyre, The Guardian, October 2020 (Internet archive.)
- 20. Who Should Stop Unethical A.I.? By Matthew Hutson, The NewYorker, February 2021 (Internet archive.)
- 21. 2020 in Review: 10 AI Failures By Fangyu Cai and Yuan Yuan, synchedreview.com, January 2021. (Internet archive.)
- 22. An Epidemic of AI Misinformation By Gary Marcus, The Gradient, November 2019. (Internet archive.)
- 23. Ethics of AI: Benefits and risks of artificial intelligence By Tiernan Ray, April 30, 2021, ZDNet. (.)
- 24. It Began as an AI-Fueled Dungeon Game. It Got Much Darker By Tom Simonite, May 2021, Wired Magazine (.)

#### 11.5 HCI-UX - Dark arts of interface design - dishonesty and manipulation

- 1. Trump Camp Uses Online Gimmick to Fuel Donations Into December. By Shane Goldmacher, New York Times, Oct. 31, 2020 (Internet archive.)
- 2. *How Trump Steered Supporters Into Unwitting Donations*. By Shane Goldmacher, April 3, 2021, The New York Times, (Internet archive.)
- 3. A UX designer breaks down the intentionally malicious design of Trumps campaign website. By Nicole Karlise, August 2020, Salon.com. (Internet archive.)
- 4. Your worst UX nightmare... notions of ethics in an unethical(?) industry. By Tyler Winstead, October 24, 2019, TryMyUI Blog. (Internet archive.)

#### 11.6 Autonomous Vehicles - more than just a trolley problem

- 1. EU Parliament to vote on AI resolution to give us power to overrule machines. By Colm Gorey, Silicon Republic, 23 Jan 2020. (Internet archive.)
- 2. Tesla Autopilot System Found Probably at Fault in 2018 Crash. By Niraj Chokshi, New York Times, Feb 25,2020. (Internet archive.)
- 3. NTSB blasts Tesla, CalTrans, and NHTSA for Autopilot death. There was plenty of blame to go around for the Apple engineer's death in 2018. By Jonathan M. Gitlan, Ars Technica, 2/26/2020. (Internet archive.)
- 4. Is One of the Most Popular Psychology Experiments Worthless? By Olga Khazan, The Atlantic, Health, July 2014 (Internet archive.)
- 5. Countries agree regulations for automated driving By The Japan Times, June 2020. (Internet archive.)
- 6. Tesla is putting self-driving in the hands of drivers amid criticism the tech is not ready By Faiz Siddiqui, The Washington Post, October 2020. (Internet archive.)
- 7. Tesla's autopilot 'easily tricked' into driving with nobody in it By Adam Smith, The Independent, April 2021. (Internet archive.)
- 8. Two die in Tesla car crash in Texas with no one in drivers seat, police say By The Guardian, Technology, April 20201. (Internet archive.)
- 9. Germany gives greenlight to driverless vehicles on public roads. By Rebecca Bellan, Tech Crunch, May 2021. (Internet archive.)
- Inside Tesla as Elon Musk Pushed an Unflinching Vision for Self-Driving Cars. By Cade Metz and Neal E. Boudette, NY Times, December 2021 (Internet archive.)
- 11. Inside Tesla as Elon Musk Pushed an Unflinching Vision for Self-Driving Cars. By Tom Kridher and Stefanie Dazio, January 2022, ABC News (Internet archive.)

### 11.7 Technical Debt

- 1. Patch fixing critical Log4J 0-day has its own vulnerability thats under exploit By Dan Goodin, December 2021 (Internet archive.)
- 2. Trouble with Exchange in 2022 Cannot Convert 220101001 to long By Marius Sandbu, January 2022 (Internet archive.)
- 3. Managing the Consequences of Technical Debt: 5 Stories from the Field By Ipek Ozkaya and Robert Nord, May 2019, Insights CMU. (Internet archive.)
- 4. Ethical Tech Starts With Addressing Ethical Debt By Casey Fiesler and Natalie Garrett, Sep 2020, Wired. (Internet archive.)

# 12 Other Case Studies From The Popular Press

### 12.1 AI

- 1. For truly ethical AI, its research must be independent from big tech By Timnit Gebru, The Guardian, December 2021. (Internet archive.)
- 2. AIs 6 Worst-Case Scenarios Who needs Terminators when you have precision clickbait and ultra-deepfakes? By Natasha Bajema, IEEE Spectrum, January 2022 (Internet archive.)

### 12.2 Personal Assistants

1. Amazon, can I have my name back? By Alexa Juliana Ard, The Washington Post, December 2021. (Internet archive.)

# 12.3 Privacy: Student Exam Surveillance and Proctoring

- 1. The impact of coronavirus on higher education By The Times Higher Education, June 2020. (Internet archive.)
- 2. Remote education is rife with threats to student privacy By Nir Kshetri, The Conversation, November 2020. (Internet archive.)
- 3. Students express privacy and security concerns over proctoring software By Mark Colley, The Charlatan, October 20, 2020 (Internet archive.)
- 4. The Pandemic Is No Excuse to Surveil Students Trying to do so is all but useless. By Zeynep Tufekci, The Atlantic, September 2020. (Internet archive.)
- 5. Exam anxiety: how remote test-proctoring is creeping students out By Monica Chin, The Verge, April 2020. (Internet archive.)
- 6. We cant teach in a technological dystopia By Andy Farrell, Times Higher Education, March 2021. (Internet archive.)
- 7. Is Online Test-Monitoring Here to Stay? By Nora Caplan-Bricker, The New Yorker, May 27, 2021 (Internet archive.)
- 8. Student Proctoring Software Gets First Test Under EU Privacy Law By Tech & Telecom Law, July 29, 2020, Bloomberg Law (Internet archive.)
- 9. Online exam proctoring no longer allowed for UC Berkeley classes By Olivia Buccieri, April 5, 2020, Berkeley's News, The Daily Californian (Internet archive.)
- 10. Web cam watches students taking tests online By Justin Pope, June 2007, NBC News. (Internet archive.)
- 11. UAE students speak out against webcam policy for online exams By Daniel Sanderson April 13, 2020, The National News. (Internet archive.)
- 12. Why online exams may breach data protection, equality and consumer law By Will Perry, July 2020, Monckton Chambers. (Internet archive.)
- 13. On or off? California schools weigh webcam concerns during distance learning By Sydney Johnson, August 2020, EdSource. (Internet archive.)
- 14. Colleges flock to online proctors, but equity concerns remain By Natalie Schwartz, April 7, 2020, HigherEdDive. (Internet archive.)
- 15. Are Schools Forcing Students To Install Spyware That Invades Their Privacy As A Result Of The Coronavirus Lockdown? By Sean Lawson, Apr 24, 2020, Cybersecurity, Forbes. (Internet archive.)
- 16. Surveillance des examens en ligne : les rappels et conseils de la CNIL By CNIL (La Commission nationale de l'informatique et des liberts de France ), May 2020. (Internet archive.)
- 17. Online Cheating Charges Upend Dartmouth Medical School By Natasha Singer and Aaron Krolik, The New York Times, May 9, 2021 (Internet archive.)
- 18. Students of color are getting flagged to their teachers because testing software cant see them By Mitchell Clark Apr 8, 2021, The Verge (Internet archive.)

## 12.4 Privacy: Facial Recognition

- 1. Leaked Reports Show EU Police Are Planning a Pan-European Network of Facial Recognition Databases Zach Campbell, Chris Jones, The Intercept, February 21, 2020. (Internet archive.)
- 2. The Secretive Company That Might End Privacy as We Know It. By Kasmir Hill, New York Times, Jan 18, 2020 (Internet archive.)
- 3. New facial recognition cameras get green light in London. By Elizabeth Howcroft, Irish Independent, January 25 2020. (Internet archive.)
- 4. It's too late to ban face recognition here's what we need instead. By Donna Lu, New Scientist, 24 January 2020. (Internet archive.)
- 5. San Diegos massive, 7-year experiment with facial recognition technology appears to be a flop. By D J Pangburn, Fast Company, 9 Jan 2020. (Internet archive.)
- 6. Harrisburg University Researchers Claim Their 'Unbiased' Facial Recognition Software Can Identify Potential Criminals By Tim Cushing, techdirt.com, 6 May 2020. (Internet archive.)
- 7. ACM calls for governments and businesses to stop using facial recognition By Khari Johnson, Venture-Beat, June 2020. (Internet archive.)
- 8. Cloak your photos with this AI privacy tool to fool facial recognition By James Vincent, Aug 4, 2020. (Internet archive.)
- 9. Clearview AI predicts 100 billion photos will give it worldwide facial recognition ability By Drew Harwell, February 2022, Washington Post. (Internet archive.)

#### 12.5 Privacy: General Surveillance

- 1. Brave uncovers widespread surveillance of UK citizens by private companies embedded on UK council websites By Johnny Ryan, Brave Insights, Policy, Press, Research, Feb 4, 2020. (Internet archive.)
- 2. Nest security cameras go offline after failed software update. By Andrew Griffin, The Independent, Tuesday 25 February 2020. (Internet archive.)
- 3. *IBMs photo-scraping scandal shows what a weird bubble AI researchers live in.* By Karen Hao, MIT Technology Review, Mar 15, 2019. (Internet archive.)
- 4. The apps you use on your phone could help diagnose your cognitive health. By Karen Hao, MIT Technology Review, Jan 10, 2020. (Internet archive.)
- 5. Alexa records you more often than you think. Youre not imagining it. Smart speakers inadvertently listen to you all the time. By Sara Morrison, Vox, Feb 21, 2020. (Internet archive.)
- Law professionals banned from working at home near Alexa devices. By Aaron Rogan, Business Post, 23 Feb 2020. (Internet archive.)
- 7. Peering through the worlds webcams By Clive Thompson, Raconteur, February 2020. (Internet archive.)
- 8. Senate Votes to Allow FBI to Look at Your Web Browsing History Without a Warrant By Janus Rose, Vice.com, May 13 2020 (Internet archive.)
- 9. Google sued for allegedly violating childrens biometric privacy with classroom tools By Chris Burt, BiometricUpdate.com, April 06 2020 (Internet archive.)

- 10. OpenWRT code-execution bug puts millions of devices at risk By Dan Goodin, Ars Technica, March 31 2020 (Internet archive.)
- 11. A wristband that tells your boss if you are unhappy By Suzanne Bearne, BBC Business News, January 2021 (Internet archive.)
- 12. *How Coronavirus Is Eroding Privacy* By Liza Lin and Timothy W. Martin, The Wall Street Journal, April 2020 (Internet archive.)
- 13. Exclusive: Warning Over Chinese Mobile Giant Xiaomi Recording Millions Of Peoples Private Web And Phone Use By Thomas Brewster, Forbes Cybersecurity, April 2020 (Internet archive.)
- 14. Target didnt figure out a teenager was pregnant before her father did, and that one article that said they did was silly and bad. By Colin Fraser, Medium.com, January 2020. (Internet archive.)
- 15. AI is being used to profile people from their head vibrations but is there enough evidence to support it? By James Wright, The Conversation, May 2021. (Internet archive.)
- 16. School mobile apps are targeting your kids 67% send their private data to third parties By Kimberly Gedeon, May 2021, Laptop Magazine (Internet archive.)
- 17. TechScape: surveillance is now just a part of daily life for US citizens By Johana Bhuiyan, February 2022, The Guardian. (Internet archive.)
- 18. Canon a installé dans ses bureaux chinois des caméras dotées d'une technologie de reconnaissance des sourires basée sur l'IA. By Nancy Rey, June 2021, developpez.com. (Internet archive.)
- 19. British using Chinese CCTV linked to repression of Uighurs. By Charlie Parker, February 2022, The Times. (Internet archive.)

## 12.6 Privacy - Tracking

- 1. Twelve Million Phones, One Dataset, Zero Privacy. By Stuart A. Thompson and Charlie Warzel, New York Times, DEC. 19, 2019 (Internet archive.)
- 2. Can you use apps to track coronavirus and protect privacy? Europe's going to try. By Hadas Gold, CNN, April 3, 2020. (Internet archive.)
- 3. A flood of coronavirus apps are tracking us. Now its time to keep track of them. By Patrick Howell ONeill, Tate Ryan-Moslay, Bobbie Johnson, Technology review, May 7, 2020 (Internet archive.)
- 4. Coronavirus: Security flaws found in NHS op contact-tracing app. By BBC News, May 2020. (Internet archive.)
- 5. Privacy is not the problem with the Apple-Google contact-tracing toolkit. By Michael Veale, The Guardian, June 2020. (Internet archive.)
- 6. Apple publishes new information about AirTags as tracking controversy continues. By Andrew Griffin, January 2022, The Independent. (Internet archive.)

## 12.7 Social Media

- 1. Facebook Dealt Blow as German Court Strikes Business Model By Karin Matussek, Bloomberg, 23 June 2020. (Internet archive.)
- 2. Whistleblower Says Facebook Ignored Global Political Manipulation By Craig Silverman, Ryan Mac and Pranav Dixit, BuzzFeed News, September 2020. (Internet archive.)
- 3. Misinformation and biases infect social media, both intentionally and accidentally By Giovanni Luca Ciampaglia and Filippo Menczer, The Conversation, January 2019 (Internet archive.)
- 4. France Orders Social Media Firms to Delete Certain Content within One Hour or Face Fines By Anthony Cuthbertson, The Independent, May 2020. (Internet archive.)
- 5. Period tracking app settles charges it lied to users about privacy By Zoe Schiffer, The Verge, Jan 13, 2021. (Internet archive.)
- 6. How social media filter bubbles and algorithms influence the election By Alex Hern, The Guardian, May, 2017. (Internet archive.)
- 7. Après Facebook, quel avenir en Europe pour les entreprises qui transfèrent des données aux Etats-Unis ? By Alice Vitard, L'Usine Digitale, September 2020. (Internet archive.)
- 8. *How Facebook got addicted to spreading misinformation* By Karen Hao, MIT technology review, March 11, 2021 (Internet archive.)
- 9. *How Facebook got addicted to spreading misinformation* By Karen Hao, MIT technology review, March 11, 2021 (Internet archive.)
- How YouTube Drives People to the Internets Darkest Corners By Jack Nicas, Wall Street Journal, Feb. 7, 2018, (Internet archive.)
- 11. An Irish former alt-right YouTuber explains his methods By Cade Metz, Apr 19, 2021, The Irish Times. (Internet archive.)
- 12. 'Fiction is outperforming reality': how YouTube's algorithm distorts truth By Paul Lewis, February 2018, The Guardian. (Internet archive.)

## 12.8 Deep Fakes

1. Jay Z tries to use copyright strikes to remove deepfaked audio of himself from YouTube By Nick Statt, The Verge, April, 2020. (Internet archive.)

# 12.9 Data Protection

- 1. Data Protection Commission launches investigations into Google and Tinder. By Michael McHugh, Irish Independent, February 04 2020 (Internet archive.)
- 2. Exclusive: Apple dropped plan for encrypting backups after FBI complained sources. By Joseph Menn, Reuters, January 21, 2020 (Internet archive.)
- 3. Your Big Data Responsibility: The Rise In Data Ethics By Christian Ofori-Boateng, Forbes, June 2020. (Internet archive.)
- 4. Children's computer game Roblox insider tricked by hacker for access to users' data By Adam Smith, The Independent, May 2020. (Internet archive.)

- 5. Zoom admits user data mistakenly routed through China By Hannah Murphy, Financial Times, April 2020 (Internet archive.)
- 6. Englands NHS plans to share patient records with third parties By Madhumita Murgia, Financial Times, May 2021 (.)
- 7. Europes Move Against Google Analytics Is Just the Beginning By Matt Burgess, Jan 2022, Wired. (.)

## 12.10 Professionalism - Teaching, Research and Engineering Ethics

#### **Professionalism - Ethics in Teaching**

- 1. Record Jobless Claims Are Overwhelming States Aging Tech By Paris Martineau, Wired, 26 May 2020. (Internet archive.)
- 2. Students are falling behind in online school. Where's the COVID- 19 'disaster plan' to catch them up? By Erin Richards, USA TODAY, December 2020. (Internet archive.)
- 3. Covid-19 tests the resilience of higher education By Michaela Martin and Uliana Furiv, The Citizen, December 2020. (Internet archive.)
- 4. Just How Dishonest Are Most Students? By Christian B. Millerv, The New York Times, November 2020. (Internet archive.)
- 5. New Research: Exploring academic integrity and mental health during COVID-19: Rapid review By Sarah Elaine Eaton, ICAI, November 2, 2020. (Internet archive.)

#### **Professionalism - Ethics in Research**

- 1. Is research integrity training a waste of time? Building good research practices begins before entering the lab. Gemma Conroy, NatureIndex, 12 February 2020. (Internet archive.)
- 2. Google's new AI language model can comprehend entire books. By Ivan Mehta, The Next Web (TNW), January 18, 2020. (Internet archive.)
- 3. Top geneticist should resign over his teams laboratory fraud. By Ian Sample, The Guardian, 1 Feb 2020. (Internet archive.)
- 4. The ethics of computer science: this researcher has a controversial proposal. By Elizabeth Gibney, Nature, 26 July 2018. (Internet archive.)
- 5. Abolish the #TechToPrisonPipeline. By the Coalition for Critical Technology, June 2020, (Internet archive.)
- 6. How to spot dubious claims in scientific papers By Gemma Conroy, NatureIndex, 8 September 2020 (Internet archive.)
- New Report Examines Reproducibility and Replicability in Science, Recommends Ways to Improve Transparency and Rigor in Research By the National Academy of Sciences, Engineering and Medicine, April 7, 2019 (Internet archive.)
- 8. Eye-catching advances in some AI fields are not real By Matthew Hutson, Science Mag., May 2020. (Internet archive.)
- 9. We read the paper that forced Timnit Gebru out of Google. By Karen Hao, Science Mag., December 2020. (Internet archive.)

- 10. Elsevier investigates hundreds of peer reviewers for manipulating citations. By Dalmeet Singh Chawla, Nature, September 2019. (Internet archive.)
- 11. What the gospel of innovation gets wrong. By Jill Lepore, The New Yorker, June 16, 2014 (Internet archive.)

#### Professionalism - Ethics in Engineering (Software)

- 1. Master, Slave and the Fight Over Offensive Terms in Computing By Kate Conger, April 2021, The New York Times. (Internet archive.)
- 2. Klarna comment: statement on app bug. By Sebastian Siemiatkowski, May 2021, Klarna. (Internet archive.)
- 3. The code I'm still ashamed of. By Bill Sourour, November 2016 freecodecamp.org. (Internet archive.)
- 4. Post Office dishonesty in Horizon scandal is reason enough for statutory public inquiry. By Karl Flinders, May 2021, Computer Weekly (Internet archive.)
- 5. Train firms worker bonus email is actually cybersecurity test. By Gwyn Topham, May 2021, The Guardian (Internet archive.)
- 6. Software without boundaries. By Bashar Nuseibeh, July 2021, LinkedIn (Internet archive.)
- 7. Lawmakers Press Amazon on Sales of Chemical Used in Suicides. By Megan Twohey and Gabriel J.X. Dance Feb. 4, 2022, New york Times. (Internet archive.)

# 12.11 Intellectual Property and Copyright

#### 12.12 Ethics Washing

1. In 2020, lets stop AI ethics-washing and actually do something By Karen Hao, MIT Technology Review, Dec 27, 2019. (Internet archive.)

## **12.13** Environmental Ethics

- 1. Why Ireland's data centre boom is complicating climate efforts: Surge in processing industry will increase Irelands already too high carbon emissions. By Rory Carroll, Irish Times, Mon, Jan 6, 2020. (Internet archive.)
- 2. Volkswagen emissions scandal: mass lawsuit opens in Germany. By Jasper Jolly, The Guardian, 30 Sep, 2019. (Internet archive.)

#### 12.13.1 NFTs

1. NFTs Werent Supposed to End Like This. By Anil Dash, April 2021, The Atlantic. (Internet archive.)

# 12.14 Crypto-Currencies

- 1. Founder of Turkish cryptocurrency exchange Thodex flees with reported \$US2 billion in investor assets. By AFP, April 2021 (Internet archive.)
- 2. Really stupid smart contract bug let hackers steal \$31 million in digital coin. By Dan Goodin, arstechnica, December 2021 (Internet archive.)

- 3. The Case Against Crypto. By Martin O'Leary, Watershed, December, 2021 (Internet archive.)
- 4. Abuse and harassment on the blockchain. By Molly White, January 2022 (Internet archive.)

# 12.15 Ethical Hacking

1. WWII and the First Ethical Hacker. By Matthew Wills, February 2017, JSTOR Daily. (Internet archive.)

# 12.16 Law and Policing

1. Flaws plague a tool meant to help low-risk federal prisoners win early release. By Carrie Johnson, January 2022, NPR. (Internet archive.)

# References

[AA17] ternational Conference on Computer Engineering and Systems (ICCES), pages 233–237. IEEE, 2017. [AA18] Monther Aldwairi and Ali Alwahedi. Detecting fake news in social media networks. Procedia Computer Science, 141:215–222, 2018. [AA19] Josephina Antoniou and Andreas Andreou. Case study: The internet of things and ethics. The Orbit Journal, 2(2), 2019. [AA20] Muhammad Adnan and Kainat Anwar. Online learning amid the covid-19 pandemic: Students' perspectives. Journal of Pedagogical Sociology and Psychology, 2(1), 2020.  $[AAF^+19]$ Ulrich Aïvodji, Hiromi Arai, Olivier Fortineau, Sébastien Gambs, Satoshi Hara, and Alain Tapp. Fairwashing: the risk of rationalization. arXiv preprint arXiv:1901.09749, 2019. [AALK19] Saleem Alhabash, Nasser Almutairi, Chen Lou, and Wonkyung Kim. Pathways to Virality: Psychophysiological Responses Preceding Likes, Shares, Comments, and Status Updates on Facebook. Media Psychology, 22(2):196–216, mar 2019. [AB19] Ali Alkhatib and Michael Bernstein. Street-level algorithms: A theory at the gaps between policy and decisions. In Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems, pages 1–13, 2019. [AC18] Supanya Aphiwongsophon and Prabhas Chongstitvatana. Detecting fake news with machine learning method. In 2018 15th International Conference on Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology (ECTI-CON), pages 528–531. IEEE, 2018. [AFAZ20] Esteban M Aucejo, Jacob French, Maria Paola Ugalde Araya, and Basit Zafar. The impact of covid-19 on student experiences and expectations: Evidence from a survey. Journal of public economics, 191:104271, 2020. [AG17] Hunt Allcott and Matthew Gentzkow. Social Media and Fake News in the 2016 Election. Journal of Economic Perspectives, 31(2):211–236, 2017. [AJGP93] Ronald E Anderson, Deborah G Johnson, Donald Gotterbarn, and Judith Perrolle. Using the new ACM code of ethics in decision making. Communications of the ACM, 36(2):98–107, 1993. [AL11] Matthew Avery and Dan Liu. Bringing smart pills to market: Fda regulation of ingestible drug/device combination products. Food and drug law journal, 66(3):329–352, 2011. [Alb07] Anders Albrechtslund. House 2.0: towards an ethics for surveillance in intelligent living and working environments. In Proceedings of the seventh international conference of computer ethics philosophical enquiry, San Diego, USA: University of San Diego, pages 7–16, 2007. [All12] Anita L Allen. What must we hide: The ethics of privacy and the ethos of disclosure. St. Thomas Law Review, 25(1):1, 2012. [And92] Ronald E Anderson. Acm code of ethics and professional conduct. Communications of the ACM, 35(5):94–99, 1992. [App98] Florence Appel. Including the social and ethical implications of computing in the computer

Ahmed AboBakr and Marianne A Azer. IoT ethics challenges and legal issues. In 2017 12th In-

science curriculum. ACM SIGCAS Computers and Society, 28(2):56–57, 1998.

- [App06] Anne G Applin. A learner-centered approach to teaching ethics in computing. In *ACM SIGCSE Bulletin*, volume 38,1, pages 530–534. ACM, 2006.
- [AR20] Janna Anderson and Lee Rainie. Many tech experts say digital disruption will hurt democracy. Technical report, Pew Research Center. Internet & Technology. Feb, 2020.
- [Are98] Hannah Arendt. The public and the private realm. In *The human condition*, chapter B, pages 22 78. University of Chicago Press, 1998.
- [AS20] Mark Andrejevic and Neil Selwyn. Facial recognition technology in schools: Critical questions and concerns. *Learning, Media and Technology*, 45(2):115–128, 2020.
- [ASBS17] Yeslam Al-Saggaf, Oliver K Burmeister, and Michael Schwartz. Qualifications and ethics education: the views of ICT professionals. *Australasian Journal of Information Systems*, 21, 2017.
- [ATA<sup>+</sup>20] Paris C Avgeriou, Davide Taibi, Apostolos Ampatzoglou, Francesca Arcelli Fontana, Terese Besker, Alexandros Chatzigeorgiou, Valentina Lenarduzzi, Antonio Martini, Nasia Moschou, Ilaria Pigazzini, et al. An overview and comparison of technical debt measurement tools. *IEEE Software*, 2020.
- [BCC<sup>+</sup>20] Jo Bates, David Cameron, Alessandro Checco, Paul Clough, Frank Hopfgartner, Suvodeep Mazumdar, Laura Sbaffi, Peter Stordy, and Antonio de la Vega de León. Integrating FATE/critical data studies into data science curricula: where are we going and how do we get there? In Proceedings of the 2020 Conference on Fairness, Accountability, and Transparency, pages 425–435, 2020.
- [Ben14] Gariella E Bensur. Cover your webcam: The ecpa's lack of protection against software that could be watching you. *Cornell L. Rev.*, 100:1191, 2014.
- [Ber03] Marina Umaschi Bers. Kaleidostories: Sharing stories across the world in a constructionist virtual community for learning. *Convergence*, 9(2):54–83, 2003.
- [BGM15] Emanuelle Burton, Judy Goldsmith, and Nicholas Mattei. Teaching ai ethics using science fiction. In Workshops at the Twenty-Ninth AAAI Conference on Artificial Intelligence, 2015.
- [BGM18] Emanuelle Burton, Judy Goldsmith, and Nicholas Mattei. How to teach computer ethics through science fiction. *Communications of the ACM*, 61(8):54–64, 2018.
- [BHH10] Jacques J Berleur, Magda David Hercheui, and Lorenz M Hilty. What Kind of Information Society? Governance, Virtuality, Surveillance, Sustainability, Resilience: 9th IFIP TC 9 International Conference, HCC9 2010 and 1st IFIP TC 11 International Conference, CIP 2010, Held as Part of WCC 2010, Brisbane, Australia, Sep, volume 328. Springer, 2010.
- [BHH18] Michael A. Beam, Myiah J. Hutchens, and Jay D. Hmielowski. Facebook news and (de)polarization: reinforcing spirals in the 2016 US election. *Information Communication and Society*, 21(7):940–958, jul 2018.
- [BJN<sup>+</sup>15] Pablo Barberá, John T. Jost, Jonathan Nagler, Joshua A. Tucker, and Richard Bonneau. Tweeting From Left to Right: Is Online Political Communication More Than an Echo Chamber? *Psychological Science*, 26(10):1531–1542, oct 2015.
- [Bla14] Mike Bland. Finding more than one worm in the apple. Communications of the ACM, 57(7):58–64, 2014.

- [BM19] Stefan Brandenburg and Michael Minge. Epos–an instrument for the assessment of the ethical position in software development. *Theoretical Issues in Ergonomics Science*, 20(2):153–165, 2019.
- [BMA15] Eytan Bakshy, Solomon Messing, and Lada A Adamic. Exposure to ideologically diverse news and opinion on Facebook. *Science*, 348(6239):1130–1132, 2015.
- [BN99] Daniel Berdichevsky and Erik Neuenschwander. Toward an ethics of persuasive technology. Communications of the ACM, 42(5):51–58, 1999.
- [Bod17] Paula Boddington. Towards a code of ethics for artificial intelligence. Springer, 2017.
- [Boe06] Barry W Boehm. Value-based software engineering: Seven key elements and ethical considerations. In *Value-based software engineering*, pages 109–132. Springer, 2006.
- [BPvdT18] Christoph Benzmüller, Xavier Parent, and Leendert van der Torre. A deontic logic reasoning infrastructure. In *Conference on Computability in Europe*, pages 60–69. Springer, 2018.
- [Bre12] Philip A E Brey. Anticipatory ethics for emerging technologies. *NanoEthics*, 6(1):1–13, 2012.
- [Bru20] Amy Bruckman. 'Have you thought about ...' talking about ethical implications of research. Communications of the ACM, 63(9):38–40, 2020.
- [BS04] Terrell Ward Bynum and Rogerson Simon. Computer ethics and professional responsibility. Blackwell Pub., 2004.
- [Bun75] Mario Bunge. Towards a technoethics. *Philosophic Exchange*, 6(1):3, 1975.
- [BVG21] Justus Bogner, Roberto Verdecchia, and Ilias Gerostathopoulos. Characterizing technical debt and antipatterns in ai-based systems: A systematic mapping study. *arXiv preprint arXiv:2103.09783*, 2021.
- [Byn92] Terrell Ward Bynum. Computer ethics in the computer science curriculum. In *Teaching com*puter ethics, pages 12–40. Southern Connecticut State University, 1992.
- [Byn99] Terrell Ward Bynum. The development of computer ethics as a philosophical field of study. The Australian Journal of Professional and Applied Ethics, 1(1):1–29, 1999.
- [Byn00a] Terrell Ward Bynum. A very short history of computer ethics. APA Newsletters on Philosophy and Computers, 99(2):2, 2000.
- [Byn00b] Terrell Ward Bynum. The foundation of computer ethics. ACM SIGCAS Computers and Society, 30(2):6–13, jun 2000.
- [Byn01] Terrell Ward Bynum. Computer ethics: Its birth and its future. *Ethics and Information Technology*, 3(2):109–112, 2001.
- [Byn06] Terrell Ward Bynum. Flourishing ethics. *Ethics and Information Technology*, 8(4):157–173, 2006.
- [Byn08] Terrell Ward Bynum. Milestones in the History of Information and Computer Ethics. In Herman T. Himma, Kenneth Einar; Tavani, editor, *The Handbook of Information and Computer Ethics*, pages 25 – 48. John Wiley & Sons, Hoboken, New Jersey, 2008.
- [Byn18] Terrell Ward Bynum. Computer and Information Ethics. In Edward N. Zalta, editor, *The Stanford Encyclopedia of Philosophy*. Metaphysics Research Lab, Stanford University, summer 201 edition, 2018.

- [C<sup>+</sup>09] Ann Cavoukian et al. Privacy by design: The 7 foundational principles. Information and Privacy Commissioner of Ontario, Canada, 5, 2009.
- [CA12] Francesca Comunello and Giuseppe Anzera. Will the revolution be tweeted? A conceptual framework for understanding the social media and the Arab Spring. *Islam and ChristianMuslim Relations*, 2012.
- [CCC09] Vic Callaghan, Graham Clarke, and Jeannette Chin. Some socio-technical aspects of intelligent buildings and pervasive computing research. *Intelligent Buildings International*, 1(1):56–74, 2009.
- [CDG<sup>+</sup>21] Michał Choraś, Konstantinos Demestichas, Agata Giełczyk, Álvaro Herrero, Paweł Ksieniewicz, Konstantina Remoundou, Daniel Urda, and Michał Woźniak. Advanced machine learning techniques for fake news (online disinformation) detection: A systematic mapping study. Applied Soft Computing, 101:107050, 2021.
- [CDM<sup>+</sup>21] Matteo Cinelli, Gianmarco De, Francisci Morales, Alessandro Galeazzi, Walter Quattrociocchi, and Michele Starnini. The echo chamber effect on social media. Proceedings of the National Academy of Sciences, 118(9), 2021.
- [Cer20] Vinton G. Cerf. On the internet of medical things. Commun. ACM, 63(8):5, July 2020.
- [CF15] Randy Connolly and Alan Fedoruk. Does computing need to go beyond good and evil impacts? Journal of Information, Communication and Ethics in Society, 13(3-4):190–204, 2015.
- [CG05] Mary Elaine Califf and Mary Goodwin. Effective incorporation of ethics into courses that focus on programming. In *ACM SIGCSE Bulletin*, volume 37,1, pages 347–351. ACM, 2005.
- [CGS<sup>+</sup>21] A. Curley, D. Gordon, I. Stavrakakis, A. Becevel, J.P. Gibson, and D. O'Sullivan. Adaptable and reusable educational bricks for teaching computer science ethics. In *EDULEARN21 Proceedings*, 13th International Conference on Education and New Learning Technologies, page 1991. IATED, 5-6 July, 2021 2021.
- [Cha17] Gauthier Chassang. The impact of the EU general data protection regulation on scientific research. *ecancermedicalscience*, 11, 2017.
- [Che21] Simon Chesterman. 'Move Fast and Break Things': Law, Technology, and the Problem of Speed. Singapore Academy of Law Journal, 33:5–23, 2021.
- [CKSV19] L Elisa Celis, Sayash Kapoor, Farnood Salehi, and Nisheeth Vishnoi. Controlling polarization in personalization: An algorithmic framework. In *Proceedings of the conference on fairness*, accountability, and transparency, pages 160–169, 2019.
- [CMP20] Simon Coghlan, Tim Miller, and Jeannie Paterson. Good proctor or" big brother"? ai ethics and online exam supervision technologies. *arXiv preprint arXiv:2011.07647*, 2020.
- [Coh02] Gerald A Cohen. Deeper into bullshit. Contours of agency: Essays on themes from Harry Frankfurt, pages 321–339, 2002.
- [Çöm19] Fatih Çömlekçi. Custodians of the internet: Platforms, content moderation, and the hidden decisions that shape social media. *Communication Today*, 10(1):165–166, 2019.
- [Con20] Randy Connolly. Why computing belongs within the social sciences. Communications of the ACM, 63(8):54-59, 2020.

[DBD <sup>+</sup> 13]	Scott Dexter, Elizabeth Buchanan, Kellen Dins, Kenneth R. Fleischmann, and Keith Miller. Characterizing the need for graduate ethics education. SIGCSE 2013 - Proceedings of the 44th ACM Technical Symposium on Computer Science Education, pages 153–158, 2013.
[DC03]	Gordana Dodig-Crnkovic. Shifting the paradigm of philosophy of science: Philosophy of information and a new renaissance. <i>Minds and Machines</i> , 13(4):521–536, 2003.
[DFSW16]	Louise Dennis, Michael Fisher, Marija Slavkovik, and Matt Webster. Formal verification of ethical choices in autonomous systems. <i>Robotics and Autonomous Systems</i> , 77:1–14, 2016.
[DM10]	Jennie C DeGagne and Barbareta A McGill. Ethical and legal issues in online education. <i>Journal of eLearning and Online Teaching</i> , 1(7):2–13, 2010.
[DPB20]	Daniella DiPaola, Blakeley H Payne, and Cynthia Breazeal. Decoding design agendas: an ethical design activity for middle school students. In <i>Proceedings of the Interaction Design and Children Conference</i> , pages 1–10, 2020.
[DPS18]	Sjur Dyrkolbotn, Truls Pedersen, and Marija Slavkovik. On the distinction between implicit and explicit ethical agency. In <i>Proceedings of the 2018 AAAI/ACM Conference on AI, Ethics, and Society</i> , pages 74–80. ACM, 2018.
[DZC <sup>+</sup> 17]	Michela Del Vicario, Fabiana Zollo, Guido Caldarelli, Antonio Scala, and Walter Quattrociocchi. Mapping social dynamics on Facebook: The Brexit debate. <i>Social Networks</i> , 50:6–16, 2017.
[Eps07]	Richard G. Epstein. An ethics and security course for students in computer science and informa- tion technology. <i>Proceedings of the Thirty-Seventh SIGCSE Technical Symposium on Computer</i> <i>Science Education</i> , pages 535–537, 2007.
[EWN21]	Elaine Englehardt, Patricia H Werhane, and Lisa H Newton. Leadership, engineering and ethical clashes at boeing. <i>Science and engineering ethics</i> , 27(1):1–17, 2021.
[FBL16]	Anthony W Flores, Kristin Bechtel, and Christopher T Lowenkamp. False positives, false negatives, and false analyses: A rejoinder to machine bias: There's software used across the country to predict future criminals. and it's biased against blacks. <i>Fed. Probation</i> , 80:38, 2016.
[FC12]	Christos A Frangonikolopoulos and Ioannis Chapsos. Explaining the role and the impact of the social media in the Arab Spring. <i>Global Media Journal: Mediterranean Edition</i> , 7(2), 2012.
[FCF20]	Marc Faddoul, Guillaume Chaslot, and Hany Farid. A Longitudinal Analysis of YouTube's Promotion of Conspiracy Videos. arXiv preprint arXiv:2003.03318, 2020.
[Fer19]	Laura Ferrarello. Social awareness in design & engineering education and practice: the value of ethics in postgraduate education. In DS 95: Proceedings of the 21st International Conference on Engineering and Product Design Education (E&PDE 2019), University of Strathclyde, Glasgow. 12th-13th September 2019, 2019.
[FGB20]	Casey Fiesler Natalie Garrett and Nathan Beard What do we teach when we teach tech

Zadia Codabux and Byron Williams. Managing technical debt: An industrial case study. In 2013 4th International Workshop on Managing Technical Debt (MTD), pages 8–15. IEEE, 2013.

Nigel Davies. Ethics in pervasive computing research. IEEE Pervasive Computing, 12(3):2-4,

[CW13]

[Dav13]

2013.

[FGB20] Casey Fiesler, Natalie Garrett, and Nathan Beard. What do we teach when we teach tech ethics? a syllabi analysis. In *Proceedings of the 51st ACM Technical Symposium on Computer Science Education*, pages 289–295, 2020.

- [FH95] Loren Falkenberg and Irene Herremans. Ethical behaviours in organizations: directed by the formal or informal systems? *Journal of business Ethics*, 14(2):133–143, 1995.
- [FH12] Batya Friedman and David Hendry. The envisioning cards: a toolkit for catalyzing humanistic and technical imaginations. In *Proceedings of the SIGCHI conference on human factors in computing systems*, pages 1145–1148, 2012.
- [FHN08] Mary Flanagan, Daniel C Howe, and Helen Nissenbaum. Embodying values in technology: Theory and practice. *Information technology and moral philosophy*, 322, 2008.
- [Fie21] Casey Fiesler. Ethical speculation in the computing classroom. In 2021 Conference on Research in Equitable and Sustained Participation in Engineering, Computing, and Technology (RESPECT), pages 1–1. IEEE, 2021.
- [Fin81] Maurice A Finocchiaro. Fallacies and the evaluation of reasoning. American Philosophical Quarterly, 18(1):13–22, 1981.
- [FK94] Batya Friedman and Peter H Kahn. Educating computer scientists: Linking the social and the technical. *Commun. ACM*, 37(1):64–70, 1994.
- [Fle06] William M. Fleischman. Meta-informatics and ethical issues in computing. In Renzo Davoli, Michael Goldweber, and Paola Salomoni, editors, *ITiCSE*, pages 232–236. ACM, 2006.
- [FLK<sup>+</sup>10] Ursula Fuller, Joyce Currie Little, Bob Keim, Charles Riedesel, Diana Fitch, and Su White. Perspectives on developing and assessing professional values in computing. ACM SIGCSE Bulletin, 41(4):174–194, 2010.
- [Flo99] Luciano Floridi. Information ethics: On the philosophical foundation of computer ethics. *Ethics* and information technology, 1(1):33–52, 1999.
- [Flo10] Luciano Floridi. The Cambridge handbook of information and computer ethics. Cambridge University Press, 2010.
- [Flo14] Luciano Floridi. The fourth revolution: How the infosphere is reshaping human reality. OUP Oxford, 2014.
- [Flo17] Luciano Floridi. Information ethics: On the philosophical foundation of computer ethics. Computer Ethics, pages 63–82, 2017.
- [Flo18] Luciano Floridi. Soft ethics and the governance of the digital. *Philosophy & Technology*, 31(1):1–8, 2018.
- [Foo67] Philippa Foot. The problem of abortion and the doctrine of double effect. Oxford Review, 5:5–15, 1967.
- [Fra09] Harry G Frankfurt. On bullshit. Princeton University Press, 2009.
- [FS02] Luciano Floridi and Jeff W Sanders. Mapping the foundationalist debate in computer ethics. Ethics and information Technology, 4(1):1–9, 2002.
- [FS05] Luciano Floridi and Jeff W Sanders. Internet ethics: The constructionist values of homo poieticus. The impact of the internet on our moral lives, pages 195–214, 2005.
- [FT16] Luciano Floridi and Mariarosaria Taddeo. What is data ethics? *Philosophical Transactions of The Royal Society A Mathematical Physical and Engineering Sciences*, 374:20160360, dec 2016.

- [FVD<sup>+</sup>16] Emilio Ferrara, Onur Varol, Clayton Davis, Filippo Menczer, and Alessandro Flammini. The rise of social bots. *Communications of the ACM*, 59(7):96–104, 2016.
- [GCO21] Damian Gordon, Michael Collins, and Dympna O'Sullivan. The development of teaching case studies to explore ethical issues associated with computer programming: Four case studies on programming ethics. In United Kingdom and Ireland Computing Education Research conference., pages 1–7, 2021.
- [GDL<sup>+</sup>11] Mikey Goldweber, Renzo Davoli, Joyce Currie Little, Charles Riedesel, Henry Walker, Gerry Cross, and Brian R. Von Konsky. Enhancing the social issues components in our computing curriculum: Computing for the social good. *ACM Inroads*, 2(1):64–82, 2011.
- [Ger75] John S Gero. Ethics in computer-aided design: a polemic. ACM SIGDA Newsletter, 5(4):9–14, 1975.
- [Ger19] Ysabel Gerrard. Behind the screen: Content moderation in the shadows of social media, 2019.
- [GG19] Hila Gonen and Yoav Goldberg. Lipstick on a pig: Debiasing methods cover up systematic gender biases in word embeddings but do not remove them. In *Proceedings of NAACL-HLT*, pages 609–614, 2019.
- [GGIMIM20] Carina S González-González, Alfonso Infante-Moro, and Juan C Infante-Moro. Implementation of e-proctoring in online teaching: A study about motivational factors. Sustainability, 12(8):3488, 2020.
- [GGT<sup>+</sup>21] Damian Gordon, J Paul Gibson, Brendan Tierney, Dympna OSullivan, and Ioannis Stavrakakis. you must have your webcam on for the entire duration of the examination: The trade-off between the integrity of on-line assessments and the privacy rights of students. In *Moving technology ethics at the forefront of society, organisations and governments*, ETHICOMP, pages 65–75. Universidad de La Rioja, 2021.
- [GGV<sup>+</sup>19] Barbara J Grosz, David Gray Grant, Kate Vredenburgh, Jeff Behrends, Lily Hu, Alison Simmons, and Jim Waldo. Embedded EthiCS: Integrating Ethics across CS Education. Commun. ACM, 62(8):54–61, jul 2019.
- [Gha02] Ahmad Ghafarian. Integrating ethical issues into the undergraduate computer science curriculum. *Journal of Computing Sciences in Colleges*, 18(2):180–188, 2002.
- [Gil18] Tarleton Gillespie. Custodians of the Internet: Platforms, content moderation, and the hidden decisions that shape social media. Yale University Press, 2018.
- [GJF<sup>+</sup>19] Nir Grinberg, Kenneth Joseph, Lisa Friedland, Briony Swire-Thompson, and David Lazer. Fake news on Twitter during the 2016 U.S. presidential election. *Science*, 363(6425):374–378, 2019.
- [GJGO21] J Paul Gibson, Yael Jacob, Damian Gordon, and Dympna OSullivan. Developing an educational brick for digital ethics. In *Moving technology ethics at the forefront of society, organisations* and governments, ETHICOMP, pages 29–37. Universidad de La Rioja, 2021.
- [GK96] Krystyna Gorniak-Kocikowska. The computer revolution and the problem of global ethics. *Science and engineering ethics*, 2(2):177–190, 1996.
- [GK07] Krystyna Górniak-Kocikowska. From computer ethics to the ethics of global ICT society. *Library Hi Tech*, 25(1):47–57, 2007.

- [GKB<sup>+</sup>18] Colin M Gray, Yubo Kou, Bryan Battles, Joseph Hoggatt, and Austin L Toombs. The dark (patterns) side of ux design. In Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems, pages 1–14, 2018.
- [GKDJ19] Purva Grover, Arpan Kumar Kar, Yogesh K Dwivedi, and Marijn Janssen. Polarization and acculturation in us election 2016 outcomes–can twitter analytics predict changes in voting preferences. *Technological Forecasting and Social Change*, 145:438–460, 2019.
- [GMR99] Donald Gotterbarn, Keith W. Miller, and Simon Rogerson. Software engineering code of ethics is approved. *Commun. ACM*, 42(10):102–107, 1999.
- [GMVJ18] Nils Gruschka, Vasileios Mavroeidis, Kamer Vishi, and Meiko Jensen. Privacy issues and data protection in big data: A case study analysis under gdpr. In 2018 IEEE International Conference on Big Data (Big Data), pages 5027–5033. IEEE, 2018.
- [Got91] Donald Gotterbarn. Computer ethics: Responsibility regained. In *National Forum*, number 3 in 71, page 26. Honor Society of Phi Kappa Phi, 1991.
- [GP19] Debora Gottardello and Maria del Mar Pàmies. Business school professors' perception of ethics in education in Europe. *Sustainability (Switzerland)*, 11(3), 2019.
- [Gre21] Samuel Greengard. The worsening state of ransomware. *Communications of the ACM*, 64(4):15–17, 2021.
- [GSG<sup>+</sup>16] Damian Gordon, Ioannis Stavrakakis, J. Paul Gibson, Brendan Tierney, Anna Becevel, Andrea Curley, Michael Collins, , William O'Mahony, and Dympna O'Sullivan. Perspectives on computing ethics: a multi-stakeholder analysis. Journal of Information, Communication and Ethics in Society, 19(?):279–286, 2016.
- [Hal14] Brian R. Hall. A synthesized definition of computer ethics. ACM SIGCAS Computers and Society, 44(3):21–35, 2014.
- [HB14] Michael Heron and Pauline Belford. "It's only a game" ethics, empathy and identification in game morality systems. *The Computer Games Journal*, 3(1):34–53, 2014.
- [HBM20] Joseph Herkert, Jason Borenstein, and Keith Miller. The boeing 737 max: lessons for engineering ethics. *Science and engineering ethics*, 26(6):2957–2974, 2020.
- [HDC18] Tobias Holstein and Gordana Dodig-Crnkovic. Avoiding the intrinsic unfairness of the trolley problem. In *Proceedings of the International Workshop on Software Fairness*, pages 32–37, 2018.
- [HDCP20] Tobias Holstein, Gordana Dodig-Crnkovic, and Patrizio Pelliccione. Real-world ethics for selfdriving cars. In *Proceedings of the ACM/IEEE 42nd International Conference on Software Engineering: Companion Proceedings*, pages 328–329, 2020.
- [HF18] Justin L Hess and Grant Fore. A systematic literature review of US engineering ethics interventions. *Science and engineering ethics*, 24(2):551–583, 2018.
- [HFG<sup>+</sup>19] Dirk Helbing, Bruno S Frey, Gerd Gigerenzer, Ernst Hafen, Michael Hagner, Yvonne Hofstetter, Jeroen Van Den Hoven, Roberto V Zicari, and Andrej Zwitter. Will democracy survive big data and artificial intelligence? In *Towards digital enlightenment*, pages 73–98. Springer, 2019.
- [Hil15] Lorenz M Hilty. Ethical issues in ubiquitous computing three technology assessment studies revisited. In *Ubiquitous Computing in the Workplace*, pages 45–60. Springer, 2015.

[Him19]	Johannes Himmelreich. Ethics of technology needs more political philosophy. Communications of the $ACM$ , $63(1):33-35$ , 2019.
[HJ18]	Daniela Haluza and David Jungwirth. ICT and the future of healthcare: aspects of pervasive health monitoring. <i>Informatics for Health and Social care</i> , 43(1):1–11, 2018.
[HK16]	Sounman Hong and Sun Hyoung Kim. Political polarization on twitter: Implications for the use of social media in digital governments. <i>Government Information Quarterly</i> , 33(4):777–782, 2016.
[HLYK19]	Albert L Harris, Michael Lang, Dave Yates, and S E Kruck. Incorporating ethics and social responsibility in IS education. <i>Journal of Information Systems Education</i> , 22(3):1, 2019.
[HM95]	Chuck Huff and C Dianne Martin. Computing consequences: a framework for teaching ethical computing. <i>Communications of the ACM</i> , 38(12):75–84, 1995.
[Hol03]	Andrew Joseph Hollander. Patenting computer data structures: The ghost, the machine and the federal circuit. <i>Duke Law &amp; Technology Review</i> , 2(1):1–13, 2003.
[HR18]	Hielke Hijmans and Charles D Raab. Ethical dimensions of the gdpr. Commentary on the General Data Protection Regulation, Cheltenham: Edward Elgar (2018, Forthcoming), 2018.
[HT09]	Kenneth Einar Himma and Herman T. Tavani. The Handbook of Information and Computer Ethics. Wiley, 2009.
[Hug15]	James K Huggins. Computing history & ethics: the relevance of the real world for social change. ACM SIGCAS Computers and Society, 45(2):34–34, 2015.
[Hut01]	Jamie Hutchinson. Culture, communication, and an information age madonna. <i>IEEE Professional Communication Society Newsletter</i> , 45(3):1–7, 2001.
[IB17]	Juneed Iqbal and Bilal Maqbool Beigh. Computer Ethics: Job of Computer Scientist. Interna- tional Journal of Advanced Research in Computer Science and Software Engineering, 7(6):41–49, 2017.
[Ioa14]	John PA Io annidis. How to make more published research true. $PLoS\ medicine,\ 11(10):e1001747,\ 2014.$
[JA03]	Anne R Jacobs and Gregory D Abowd. A framework for comparing perspectives on privacy and pervasive technologies. <i>IEEE Pervasive Computing</i> , 2(4):78–84, 2003.
[JNH <sup>+</sup> 20]	Benjamin K. Johnson, Rachel L. Neo, Marieke E.M. Heijnen, Lotte Smits, and Caitrina van Veen. Issues, involvement, and influence: Effects of selective exposure and sharing on polarization and participation. <i>Computers in Human Behavior</i> , 104:106155, mar 2020.
[Joh85]	Deborah Johnson. Computer ethics. the Philosophy of Computing and Information, 1985.
[Joh94]	Deborah Johnson. Who should teach computer ethics and computers & society? ACM SIGCAS Computers and Society, 24(2):6–13, 1994.
[Joh09]	Keith W. Johnson, Deborah G.; Miller, editor. <i>Computer Ethics</i> . Pearson, Upper Saddle River, N.J., 4th edition, 2009.
[Joh10]	Jane Johnson. Teaching Ethics to Science Students: Challenges and a Strategy. In B. Selgelid, M. & Rappert, editor, <i>Education and Ethics in the Life Sciences: Strengthening the Prohibition</i> of <i>Biological Weapons</i> , Strengthening the Prohibition of Biological Weapons, pages 197–214. ANU Press, oct 2010.

[Joy06]	Donald Joyce. Raising awareness about academic integrity. In <i>ITICSE '06: Proceedings of the</i> 11th annual SIGCSE conference on Innovation and technology in computer science education, pages 350–350, New York, NY, USA, 2006. ACM.
[JPS19]	John Jerrim, Philip Parker, and Dominique Shure. Bullshitters. who are they and what do we know about their lives? <i>IZA Discussion Papers</i> , 12282, 2019.
[Jud09]	Ken H Judy. Agile principles and ethical conduct. In 2009 42nd Hawaii International Conference on System Sciences, pages 1–8. IEEE, 2009.
[KBS <sup>+</sup> 19]	Daniel W. Knight, Angela R. Bielefeldt, Chris Swan, Nathan E. Canney, and Madeline Polmear. Exploring the range of methods used to assess engineering students' education on ethical and societal impact issues. <i>Proceedings - Frontiers in Education Conference, FIE</i> , 2018-Octob:1–7, 2019.
[Kes16]	Shalini Kesar. Including teaching ethics into pedagogy: preparing information systems students to meet global challenges of real business settings. <i>ACM SIGCAS Computers and Society</i> , 45(3):432–437, 2016.
[KF14]	Yana Kortsarts and Adam Fischbach. Incorporating professional ethics into an introductory computer science course. <i>Journal of Computing Sciences in Colleges</i> , 29(3):35–42, 2014.
[KH20]	Paul A Kirschner and Carl Hendrick. How Learning Happens: Seminal Works in Educational Psychology and what They Mean in Practice. Routledge, 2020.
[KKH19]	Shreya Kumar and Nathaniel Kremer-Herman. Integrating Ethics Across Computing: An Experience Report of Three Computing Courses Engaging Ethics and Societal Impact through Roleplaying, Case Studies, and Service Learning. <i>Proceedings - Frontiers in Education Conference, FIE</i> , 2019-Octob, 2019.
[KMR17]	Jon Kleinberg, Sendhil Mullainathan, and Manish Raghavan. Inherent Trade-Offs in the Fair Determination of Risk Scores. In Christos H. Papadimitriou, editor, 8th Innovations in Theoret- ical Computer Science Conference (ITCS 2017), volume 67 of Leibniz International Proceedings in Informatics (LIPIcs), pages 43:1–43:23, Dagstuhl, Germany, 2017. Schloss Dagstuhl–Leibniz- Zentrum fuer Informatik.
[Kra11]	Theresa Kraft. Computer ethics: A slow fade from black and white to shades of gray. <i>Infor-</i> mation Systems Education Journal, 9(4):37, 2011.
[Kra19]	Melvin Kranzberg. Ethics in an age of pervasive technology. Routledge, 2019.
[KS13]	Karin R Knapp and Ali Soylu. Technology: The good, the bad, and the ugly. how technology is affecting employee privacy, work life balance, and workplace relationships. <i>Mustang Journal of Management and Marketing</i> , 2:69–80, 2013.
[KSG13]	Michal Kosinski, David Stillwell, and Thore Graepel. Private traits and attributes are pre- dictable from digital records of human behavior. <i>Proceedings of the national academy of sciences</i> , 110(15):5802–5805, 2013.
[KSW21]	Daniel G Krutka, Ryan M Smits, and Troy A Willhelm. Dont be evil: Should we use google in schools? <i>TechTrends</i> , pages 1–11, 2021.
[KT19]	Neema Kotonya and Francesca Toni. Gradual argumentation evaluation for stance aggregation in automated fake news detection. In <i>Proceedings of the 6th Workshop on Argument Mining</i> , pages 156–166, 2019.

- [LAL15] Zengyang Li, Paris Avgeriou, and Peng Liang. A systematic mapping study on technical debt and its management. *Journal of Systems and Software*, 101:193–220, 2015.
- [Lan20] Thomas Langenfeld. Internet-based proctored assessment: Security and fairness issues. *Educational Measurement: Issues and Practice*, 39(3):24–27, 2020.
- [LBB<sup>+</sup>18] David Lazer, Matthew Baum, Yochai Benkler, Adam Berinsky, Kelly Greenhill, Filippo Menczer, Miriam Metzger, Brendan Nyhan, Gordon Pennycook, and David Rothschild. The Science of Fake News: Addressing Fake News Requires a Multidisciplinary Effort. Science, 359(8), 2018.
- [LBT<sup>+</sup>21] Valentina Lenarduzzi, Terese Besker, Davide Taibi, Antonio Martini, and Francesca Arcelli Fontana. A systematic literature review on technical debt prioritization: Strategies, processes, factors, and tools. *Journal of Systems and Software*, 171:110827, 2021.
- [LCR20] Kobi Leins, Chris Culnane, and Benjamin IP Rubinstein. Tracking, tracing, trust: contemplating mitigating the impact of covid-19 through technological interventions. *The Medical Journal* of Australia, page 1, 2020.
- [LDW19] Li-Jen Yu Lester and Yaprak Dalat-Ward. Teaching Professionalism and Ethics in Information Technology by Deliberative Dialogue. *Information Systems Education Journal*, 17(1):4, 2019.
- [Lee15] Patrick Leerssen. Cut Out By The Middle Man: The Free Speech Implications Of Social Network Blocking and Banning In The EU. J. Intell. Prop. Info. Tech. & Elec. Com. L., 6:99, 2015.
- [Les09] Lawrence Lessig. Code: And other laws of cyberspace. ReadHowYouWant.com, 2009.
- [Lev20] Nancy Leveson. Are you sure your software will not kill anyone? Communications of the ACM, 63(2):25–28, 2020.
- [Lev21] Ro'ee Levy. Social media, news consumption, and polarization: Evidence from a field experiment. American Economic Review, 111(3):831–870, 2021.
- [LHF<sup>+</sup>19] Michele Loi, Christoph Heitz, Andrea Ferrario, Anita Schmid, and Markus Christen. Towards an ethical code for data-based business. In 2019 6th Swiss Conference on Data Science (SDS), pages 6–12. IEEE, 2019.
- [Lit21] Michael L Littman. Collusion rings threaten the integrity of computer science research. Communications of the ACM, 64(6):43–44, 2021.
- [LKG<sup>+</sup>99] Joyce Currie Little, Norbert J. Kubilus, Mary J. Granger, Susan K. Lippert, Roger Boyle, W. Michael McCracken, Jill Gerhardt-Powals, Grazyna Paliwoda, John Impagliazzo, Piotr Soja, and Carol Janik. Integrating professionalism and workplace issues into the computing and information technology curriculum. Annual Conference on Innovation and Technology in Computer Science Education, ITiCSE, Part F1291(4):106–120, 1999.
- [LM18] David K Larson and Keith W Miller. Action ethics: testing and data analysis. ACM Inroads, 9(1):34–37, 2018.
- [Low17] Rodney L. Lowman. *Ethical and Legal Concerns in Internet-Based Testing*, page 350374. Educational and Psychological Testing in a Global Context. Cambridge University Press, 2017.
- [LP19] Adam Lerer and Alexander Peysakhovich. Learning existing social conventions via observationally augmented self-play. In *Proceedings of the 2019 AAAI/ACM Conference on AI, Ethics,* and Society, pages 107–114, 2019.

- [LR03] Michael R Lissack and Kurt A Richardson. Models without morals: toward the ethical use of business models. *Emergence*, 5(2):72–102, 2003.
- [LS20] Christine Ladwig and Dana Schwieger. Ethical coding: Privacy, ethics & law in computing. Information Systems Education Journal, 18(2):50–57, 2020.
- [Mac17] Kevin Macnish. The ethics of surveillance: An introduction. Routledge, 2017.
- [Man16] Nazanin Mansouri. A case study of volkswagen unethical practice in diesel emission test. International Journal of Science and Engineering Applications, 5(4):211–216, 2016.
- [Mar98] C. Dianne Martin. Deconstructing the ACM code of ethics and professional conduct. SIGCSE Bulletin (Association for Computing Machinery, Special Interest Group on Computer Science Education), 30(4), 1998.
- [MAT<sup>+</sup>16] Brent Daniel Mittelstadt, Patrick Allo, Mariarosaria Taddeo, Sandra Wachter, and Luciano Floridi. The ethics of algorithms: Mapping the debate. *Big Data & Society*, 3(2):2053951716679679, 2016.
- [MBN10] Paul J McCullagh, Mark Beattie, and Chris D Nugent. Pervasive technology to facilitate wellness. In *Proceedings of the 3rd International Conference on Pervasive Technologies Related* to Assistive Environments, pages 1–4, 2010.
- [MCB19] Diana Adela Martin, Eddie Conlon, and Brian Bowe. The role of role-play in student awareness of the social dimension of the engineering profession. *European Journal of Engineering Education*, 44(6):882–905, 2019.
- [McG12] A.H. McGowan. Teaching science and ethics to undergraduates: A multidisciplinary approach. Science and Engineering Ethics, pages 1–9, 2012.
- [McL11] Athena McLean. Ethical frontiers of ict and older users: cultural, pragmatic and ethical issues. Ethics and information technology, 13(4):313–326, 2011.
- [MFBH08] Julie Myers, Thomas R Frieden, Kamal M Bherwani, and Kelly J Henning. Ethics in public health research: privacy and public health at risk: public health confidentiality in the digital age. *American Journal of public health*, 98(5):793–801, 2008.
- [MFKE20] Jessica Morley, Luciano Floridi, Libby Kinsey, and Anat Elhalal. From what to how: an initial review of publicly available AI ethics tools, methods and research to translate principles into practices. *Science and engineering ethics*, 26(4):2141–2168, 2020.
- [MFLS21] Ana Melo, Roberta Fagundes, Valentina Lenarduzzi, and Williams Santos. Identification and measurement of technical debt requirements in software development: a systematic literature review. arXiv preprint arXiv:2105.14232, 2021.
- [MGP<sup>+</sup>20] Andrea Martani, Lester Darryl Geneviève, Christopher Poppe, Carlo Casonato, and Tenzin Wangmo. Digital pills: a scoping review of the empirical literature and analysis of the ethical aspects. *BMC medical ethics*, 21(1):1–13, 2020.
- [Mit86] Carl Mitcham. Computers: From ethos and ethics to mythos and religion: Notes on the new frontier between computers and philosophy. *Technology in Society*, 8(3):171–201, 1986.
- [Mit95] Carl Mitcham. Computers, information and ethics: A review of issues and literature. *Science and Engineering Ethics*, 1(2):113–132, 1995.

- [Mit17] Brent Mittelstadt. Ethics of the health-related internet of things: a narrative review. *Ethics and Information Technology*, 19(3):157–175, 2017.
- [ML05] Keith W Miller and David K Larson. Agile software development: human values and culture. *IEEE Technology and Society Magazine*, 24(4):36–42, 2005.
- [MM16] Michael Madary and Thomas K Metzinger. Real virtuality: a code of ethical conduct. recommendations for good scientific practice and the consumers of vr-technology. *Frontiers in Robotics and AI*, 3:3, 2016.
- [MMK02] Barbara Moskal, Keith Miller, and L. A.Smith King. Grading essays in computer ethics: Rubrics considered helpful. *SIGCSE Bulletin (Association for Computing Machinery, Special Interest Group on Computer Science Education)*, pages 101–105, 2002.
- [Moo85] James H Moor. What is computer ethics? *Metaphilosophy*, 16(4):266–275, 1985.
- [Mor08] David L Morgan. Snowball sampling. The SAGE encyclopedia of qualitative research methods, 2:815–816, 2008.
- [MPG14] Caroline Lancelot Miltgen and Dominique Peyrat-Guillard. Cultural and generational influences on privacy concerns: a qualitative study in seven European countries. *European Journal of Information Systems*, 23(2):103–125, mar 2014.
- [MUMRPL17] Rafael Miñano, Ángel Uruburu, Ana Moreno-Romero, and Diego Pérez-López. Strategies for Teaching Professional Ethics to IT Engineering Degree Students and Evaluating the Result. Science and Engineering Ethics, 23(1):263–286, 2017.
- [NC17] Andre L Nel and Johnson Carroll. Ethics assessment via game play? In 2017 IEEE Global Engineering Education Conference (EDUCON), pages 660–666. IEEE, 2017.
- [NV14] Arvind Narayanan and Shannon Vallor. Why software engineering courses should include ethics coverage. *Communications of the ACM*, 57(3):23–25, 2014.
- [OB18] Katherine O'Keefe and Daragh O Brien. Ethical data and information management: concepts, tools and methods. Kogan Page Publishers, 2018.
- [OLG<sup>+</sup>06] Ciaran O'Leary, Deirdre Lawless, Damian Gordon, Dave Carroll, Fred Mtenzi, and Michael Collins. 3d alignment in the adaptive software engineering curriculum. In *Proceedings. Frontiers* in Education. 36th Annual Conference, pages 1–6. IEEE, 2006.
- [O'N16] Cathy O'Neil. Weapons of math destruction: How big data increases inequality and threatens democracy. Broadway Books, 2016.
- [OPVM19] Ziad Obermeyer, Brian Powers, Christine Vogeli, and Sendhil Mullainathan. Dissecting racial bias in an algorithm used to manage the health of populations. *Science*, 366(6464):447–453, 2019.
- [Par68] Donn B Parker. Rules of ethics in information processing. Communications of the ACM, 11(3):198–201, 1968.
- [Pas17] Don Passey. Computer science (CS) in the compulsory education curriculum: Implications for future research. *Education and Information Technologies*, 22(2):421–443, 2017.
- [PB09] Anastasia Pease and Robert Baker. Union College's Rapaport Everyday Ethics Across the Curriculum Initiative. *Teaching Ethics*, 9(2):5–24, 2009.

- [PB19] Samir Passi and Solon Barocas. Problem formulation and fairness. In Proceedings of the Conference on Fairness, Accountability, and Transparency, pages 39–48, 2019.
- [PB20] Vinay Uday Prabhu and Abeba Birhane. Large image datasets: A pyrrhic win for computer vision? arXiv preprint arXiv:2006.16923, 2020.
- [PBPHK01] Michael Jay Polonsky, Pedro Quelhas Brito, Jorge Pinto, and Nicola Higgs-Kleyn. Consumer ethics in the European Union: A comparison of northern and southern views. Journal of Business Ethics, 31(2):117–130, 2001.
- [Pet21] Catherine Petrozzino. Who pays for ethical debt in ai? AI and Ethics, pages 1–4, 2021.
- [PR21] Gordon Pennycook and David G Rand. The psychology of fake news. *Trends in cognitive sciences*, 2021.
- [PW14] Norberto Patrignani and Diane Whitehouse. Slow tech: a quest for good, clean and fair ict. Journal of Information, Communication and Ethics in Society, 2014.
- [Qui06a] Michael J Quinn. Case-based analysis: A practical tool for teaching computer ethics. In Proceedings of the 37th SIGCSE technical symposium on Computer science education, pages 520–524, 2006.
- [Qui06b] Michael J Quinn. On teaching computer ethics within a computer science department. *Science* and Engineering Ethics, 12(2):335–343, 2006.
- [RB19] Inioluwa Deborah Raji and Joy Buolamwini. Actionable auditing: Investigating the impact of publicly naming biased performance results of commercial AI products. In *Proceedings of the 2019 AAAI/ACM Conference on AI, Ethics, and Society*, pages 429–435, 2019.
- [RBM00] Leif Bloch Rasmussen, Colin Beardon, and Silvio Munari. Computers and Networks in the Age of Globalization: IFIP TC9 Fifth World Conference on Human Choice and Computers August 2528, 1998, Geneva, Switzerland, volume 57. Springer Science & Business Media, 2000.
- [RDAW<sup>+</sup>19] Alexey Romanov, Maria De-Arteaga, Hanna Wallach, Jennifer Chayes, Christian Borgs, Alexandra Chouldechova, Sahin Geyik, Krishnaram Kenthapadi, Anna Rumshisky, and Adam Kalai. What's in a name? reducing bias in bios without access to protected attributes. In Proceedings of the 2019 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies, Volume 1 (Long and Short Papers), pages 4187– 4195, 2019.
- [RdMNS18] Nicolli Rios, Manoel Gomes de Mendonça Neto, and Rodrigo Oliveira Spínola. A tertiary study on technical debt: Types, management strategies, research trends, and base information for practitioners. *Information and Software Technology*, 102:117–145, 2018.
- [Rem20] Ridhaa Remtulla. The present and future applications of technology in adapting medical education amidst the covid-19 pandemic. *JMIR medical education*, 6(2):e20190, 2020.
- [RF91] Donna M Randall and Maria F Fernandes. The social desirability response bias in ethics research. *Journal of business ethics*, 10(11):805–817, 1991.
- [RM20] Leevi Rantala and Mika Mäntylä. Predicting technical debt from commit contents: reproduction and extension with automated feature selection. *Software Quality Journal*, 28(4):1551–1579, 2020.
- [RML17] Simon Rogerson, Keith Miller, and David Larson. The Ethics of Information Systems challenges and opportunities : a panel discussion. *Midwest (MWAIS)*, 6, 2017.

- [Rob19] Sarah T Roberts. Behind the screen: Content moderation in the shadows of social media. Yale University Press, 2019.
- [RRC<sup>+</sup>17] Björn Ross, Michael Rist, Guillermo Carbonell, Benjamin Cabrera, Nils Kurowsky, and Michael Wojatzki. Measuring the reliability of hate speech annotations: The case of the european refugee crisis. arXiv preprint arXiv:1701.08118, 2017.
- [RS18] Joel R Reidenberg and Florian Schaub. Achieving big data privacy in education. *Theory and Research in Education*, 16(3):263–279, 2018.
- [RSA21] Inioluwa Deborah Raji, Morgan Klaus Scheuerman, and Razvan Amironesei. You can't sit with us: Exclusionary pedagogy in ai ethics education. In Proceedings of the 2021 ACM Conference on Fairness, Accountability, and Transparency, pages 515–525, 2021.
- [RSWC20] Rob Reich, Mehran Sahami, Jeremy M. Weinstein, and Hilary Cohen. Teaching computer ethics: A deeply multidisciplinary approach. Annual Conference on Innovation and Technology in Computer Science Education, ITiCSE, pages 296–302, 2020.
- [SB16] Andrew Scott and Scott Barlowe. How software works: Computational thinking and ethics before CS1. *Proceedings Frontiers in Education Conference, FIE*, 2016-Novem, 2016.
- [SBB<sup>+</sup>18] Michael Skirpan, Nathan Beard, Srinjita Bhaduri, Casey Fiesler, and Tom Yeh. Ethics education in context: A case study of novel ethics activities for the cs classroom. In *Proceedings of the* 49th ACM Technical Symposium on Computer Science Education, pages 940–945, 2018.
- [SBF<sup>+</sup>19] Andrew D Selbst, Danah Boyd, Sorelle A Friedler, Suresh Venkatasubramanian, and Janet Vertesi. Fairness and abstraction in sociotechnical systems. In Proceedings of the Conference on Fairness, Accountability, and Transparency, pages 59–68, 2019.
- [SC17] Sue Sentance and Andrew Csizmadia. Computing in the curriculum: Challenges and strategies from a teacher's perspective. *Education and Information Technologies*, 22(2):469–495, 2017.
- [Sch14] Karen Schrier. Learning, education and games. Volume one: Curricular and design considerations. Carnegie Mellon University, 2014.
- [Sch17] Karen Schrier. Designing role-playing video games for ethical thinking. *Educational Technology* Research and Development, 65(4):831–868, 2017.
- [SCY18] Michael Skirpan, Jacqueline Cameron, and Tom Yeh. Quantified self: An interdisciplinary immersive theater project supporting a collaborative learning environment for CS ethics. SIGCSE 2018 - Proceedings of the 49th ACM Technical Symposium on Computer Science Education, 2018-Janua:946–951, 2018.
- [SDC<sup>+</sup>20] Hong Shen, Wesley Deng, Aditi Chattopadhyay, Steven Wu, Xu Wang, and Haiyi Zhu. Value Cards: An Educational Toolkit for Teaching Social Impacts of Machine Learning through Deliberation. arXiv preprint arXiv:2010.11411, 2020.
- [SEJC14] Bernd Carsten Stahl, Grace Eden, Marina Jirotka, and Mark Coeckelbergh. From computer ethics to responsible research and innovation in ict: The transition of reference discourses informing ethics-related research in information systems. *Information & Management*, 51(6):810–818, 2014.
- [SG08] Kristie Saumure and Lisa M Given. Convenience sample. The SAGE encyclopedia of qualitative research methods, page 125, 2008.

- [SG10] Karen Schrier and David Gibson. *Ethics and game design: teaching values through play: teaching values through play.* IGI Global, 2010.
- [SG20] Robin Sexton and Benjamin Garner. Student Perspectives of Effective Pedagogical Strategies for Teaching Ethics. *Marketing Education Review*, 30(2):132–137, 2020.
- [SGM19] Emma Strubell, Ananya Ganesh, and Andrew McCallum. Energy and policy considerations for deep learning in nlp. In *Proceedings of the 57th Annual Meeting of the Association for Computational Linguistics*, pages 3645–3650, 2019.
- [SGT<sup>+</sup>21] Ioannis Stavrakakis, Damian Gordon, Brendan Tierney, Anna Becevel, Emma Murphy, Gordana Dodig-Crnkovic, Radu Dobrin, Viola Schiaffonati, Cristina Pereira, Svetlana Tikhonenko, J. Paul Gibson, Stephane Maag, Francesco Agresta, Andrea Curley, Michael Collins, and Dympna O'Sullivan. The teaching of computer ethics on computer science and related degree programmes: A european survey. International Journal of Ethics Education, pages 1–29, October 2021.
- [Sha18] Hetan Shah. Algorithmic accountability. Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences, 376(2128):20170362, 2018.
- [SK09] Reinhard Steurer and Astrid Konrad. Businesssociety relations in Central-Eastern and Western Europe: How those who lead in sustainability reporting bridge the gap in corporate (social) responsibility. *Scandinavian Journal of Management*, 25(1):23–36, 2009.
- [Sla11] James. M. Slack. Computer ethics A slow fade from black and white to shades of gray. Information System Education Journal, 9(4):68, 2011.
- [SLOI20] Muhamed Skenderi, Shkurte Luma-Osmani, and Florinda Imeri. Ethics in DevOps, the attitude of programmers towards it. *Journal of Natural Sciences and Mathematics of UT*, 5(9-10):69–85, 2020.
- [Slu20] Ludwig Slusky. Cybersecurity of online proctoring systems. Journal of International Technology and Information Management, 29(1):56–83, 2020.
- [SMC18] Sahil Sholla, Roohie Naaz Mir, and Mohammad Ahsan Chishti. Docile Smart City Architecture: Moving Toward an Ethical Smart City. *International Journal of Computing and Digital Systems*, 7(03):167–174, 2018.
- [SMKR19] Saeed Sharifi-Malvajerdi, Michael Kearns, and Aaron Roth. Average individual fairness: Algorithms, generalization and experiments. In Advances in Neural Information Processing Systems, pages 8240–8249, 2019.
- [SMO<sup>+</sup>20] Ben Rydal Shapiro, Amanda Meng, Cody O'Donnell, Charlotte Lou, Edwin Zhao, Bianca Dankwa, and Andrew Hostetler. Re-shape: A method to teach data ethics for data science education. In Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems, pages 1–13, 2020.
- [SP06] Sarah Spiekermann and Frank Pallas. Technology paternalismwider implications of ubiquitous computing. *Poiesis & praxis*, 4(1):6–18, 2006.
- [Spe20] Edward Howlett Spence. The sixth estate: tech media corruption in the age of information. Journal of Information, Communication and Ethics in Society, 2020.
- [Spo17] Dominic Spohr. Fake news and ideological polarization: Filter bubbles and selective exposure on social media. *Business Information Review*, 34(3):150–160, aug 2017.

- [Sri14] Ramesh Srinivasan. What Tahrir Square has done for social media: A 2012 snapshot in the struggle for political power in Egypt. *The Information Society*, 30(1):71–80, 2014.
- [SS15] Simon and Judy Sheard. Academic integrity and professional integrity in computing education. In Proceedings of the 2015 ACM Conference on Innovation and Technology in Computer Science Education, ITiCSE '15, pages 237–241, New York, NY, USA, 2015. ACM.
- [SS17] Kyarash Shahriari and Mana Shahriari. IEEE standard review Ethically aligned design: A vision for prioritizing human well-being with artificial intelligence and autonomous systems. In 2017 IEEE Canada International Humanitarian Technology Conference (IHTC), pages 197–201. IEEE, 2017.
- [SSF<sup>+</sup>19] Jeffrey Saltz, Michael Skirpan, Casey Fiesler, Micha Gorelick, Tom Yeh, Robert Heckman, Neil Dewar, and Nathan Beard. Integrating ethics within machine learning courses. ACM Transactions on Computing Education (TOCE), 19(4):1–26, 2019.
- [Sta20] Anthony Stacey. Reimagining academic writing in academia 4.0 to de-incentivise plagiarism. Electronic Journal of Business Research Methods, 18(1), 2020.
- [STM16] Bernd Carsten Stahl, Job Timmermans, and Brent Daniel Mittelstadt. The ethics of computing: A survey of the computing-oriented literature. *Acm Computing Surveys (CSUR)*, 48(4):1–38, 2016.
- [Sto20] Victoria Stodden. The data science life cycle: a disciplined approach to advancing data science as a science. *Communications of the ACM*, 63(7):58–66, 2020.
- [SWR05] Janice C Sipior, Burke T Ward, and Georgina R Roselli. The ethical and legal concerns of spyware. *Information Systems Management*, 22(2):39–49, 2005.
- [SZV<sup>+</sup>19] Rodrigo O Spínola, Nico Zazworka, Antonio Vetro, Forrest Shull, and Carolyn Seaman. Understanding automated and human-based technical debt identification approaches-a two-phase study. Journal of the Brazilian Computer Society, 25(1):1–21, 2019.
- [Tan19] Hemant Taneja. The era of move fast and break things is over. *Harvard Business Review*, 21, 2019.
- [Tav01] Herman T. Tavani. The state of computer ethics as a philosophical field of inquiry: Some contemporary perspectives, future projections, and current resources. *Ethics and Information Technology*, 3(2):97–108, 2001.
- [Tav13] Herman T Tavani. *Ethics and technology*. Wiley, 2013.
- [Tho85] Judith Jarvis Thomson. The trolley problem. The Yale Law Journal, 94(6):1395–1415, 1985.
- [TKLvV13] Damian A Tamburri, Philippe Kruchten, Patricia Lago, and Hans van Vliet. What is social debt in software engineering? In 2013 6th International Workshop on Cooperative and Human Aspects of Software Engineering (CHASE), pages 93–96. IEEE, 2013.
- [TMM<sup>+</sup>18] Clare Victoria Thornley, Sinéad Murnane, Stephen McLoughlin, Marian Carcary, Eileen Doherty, and Louise Veling. The role of ethics in developing professionalism within the global ict community. International Journal of Human Capital and Information Technology Professionals (IJHCITP), 9(4):56–71, 2018.
- [TP13] Omer Tene and Jules Polonetsky. A theory of creepy: technology, privacy and shifting social norms. Yale JL & Tech., 16:59, 2013.

- [Tuc91] Allen B Tucker. Computing curricula 1991. Communications of the ACM, 34(6):68–84, 1991.
- [Tuf17] Zeynep Tufekci. Twitter and tear gas: The power and fragility of networked protest. Yale University Press, 2017.
- [Tuf18] Zeynep Tufekci. How social media took us from Tahrir Square to Donald Trump. *MIT Tech*nology Review, 14:18, 2018.
- [Tuk77] John W Tukey. *Exploratory data analysis*, volume 2. Reading, MA, 1977.
- [TWN<sup>+</sup>15] Clare Thornley, Anthony Watkinson, Dave Nicholas, Rachel Volentine, Hamid R Jamali, Eti Herman, Suzie Allard, Kenneth Levine, and Carol Tenopir. The role of trust and authority in the citation behaviour of researchers. *Information research*, 2015.
- [VA17] Brendan Van Alsenoy. Reconciling the (extra) territorial reach of the gdpr with public international law. *KU Leuven*, 2017.
- [Vak20] Sepehr Vakil. ive always been scared that someday im going to sell out: Exploring the relationship between political identity and learning in computer science education. *Cognition and Instruction*, 38(2):87–115, 2020.
- [Val16] Shannon Vallor. The Stanford Encyclopedia of Philosophy, chapter Social Networking and Ethics. Stanford University, winter 201 edition, 2016.
- [Var18] Moshe Y Vardi. Move Fast and Break Things. COMMUNICATIONS OF THE ACM, 61(9), 2018.
- [Vat20] Amy Vatcha. Workplace surveillance outside the workplace: An analysis of e-monitoring remote employees. *iSCHANNEL* - *Information Systems student journal (LSE)*, 15(1):4–9, 2020.
- [VCKC21] Ramon Villa-Cox, Ashiqur R KhudaBukhsh, and Kathleen M Carley. Exploring Polarization of Users Behavior on Twitter During the 2019 South American Protests. arXiv preprint arXiv:2104.05611, 2021.
- [VHB21] Birgit Vogel-Heuser and Fandi Bi. Interdisciplinary effects of technical debt in companies with mechatronic products qualitative study. *Journal of Systems and Software*, 171:110809, 2021.
- [VL17] Gert Vermeulen and Eva Lievens. Data protection and privacy under pressure: transatlantic tensions, EU surveillance, and big data. Maklu, 2017.
- [VLR20] Jacky Visser, John Lawrence, and Chris Reed. Reason-checking fake news. *Communications of the ACM*, 63(11):38–40, 2020.
- [Von08] Brian R Von Konsky. Defining the ICT profession: A partnership of stakeholders. Proceedings of the 21st Annual Conference of the National Advisory Committee on Computing Qualifications, pages 15–22, 2008.
- [VRA18] Soroush Vosoughi, Deb Roy, and Sinan Aral. The spread of true and false news online. *Science*, 359(6380):1146–1151, 2018.
- [WAF17] Daniel Wood, Noah Apthorpe, and Nick Feamster. Cleartext data transmissions in consumer iot medical devices. In *Proceedings of the 2017 Workshop on Internet of Things Security and Privacy*, pages 7–12, 2017.
- [Wag18] Ben Wagner. Ethics as an escape from regulation: From ethics-washing to ethics-shopping. Being profiling. Cogitas ergo sum, pages 84–90, 2018.

[War73]	Willis H Ware. Records, computers and the rights of citizens, 1973.
[WB19]	Daniel Woldeab and Thomas Brothen. 21st century assessment: Online proctoring, test anxiety, and student performance. International Journal of E-Learning & Distance Education, 34(1):1, 2019.
[WCD <sup>+</sup> 18]	Meredith Whittaker, Kate Crawford, Roel Dobbe, Genevieve Fried, Elizabeth Kaziunas, Varoon Mathur, Sarah Mysers West, Rashida Richardson, Jason Schultz, and Oscar Schwartz. AI now report 2018. AI Now Institute at New York University New York, 2018.
[Wei76]	Joseph Weizenbaum. Computer power and human reason: From judgment to calculation. WH Freeman and Co, 1976.
[Wei18]	Dee A. B. Weikle. Teaching the code and ethics in computing. ACM SIGCAS Computers and Society, 48(1):9–11, 2018.
[Wie50]	Norbert Wiener. The Human Use Of Human Beings: Cybernetics And Society. Houghton Mifflin, second ed. edition, 1950.
[Wie88]	Norbert Wiener. The human use of human beings: Cybernetics and society. Da Capo Press, 1988.
[Wil04]	S Mitchell Williams. An international investigation of associations between societal variables and the amount of disclosure on information technology and communication problems: The case of y2k. <i>The International Journal of Accounting</i> , 39(1):71–92, 2004.
[Wol16]	Marilyn Wolf. Embedded software in crisis. Computer, 49(1):88–90, 2016.
[WPR <sup>+</sup> 19]	Helena Webb, Menisha Patel, Michael Rovatsos, Alan Davoust, Sofia Ceppi, Ansgar Koene, Liz Dowthwaite, Virginia Portillo, Marina Jirotka, and Monica Cano. It would be pretty immoral to choose a random algorithm. <i>Journal of Information, Communication and Ethics in Society</i> , 2019.
[WSS13]	Gadi Wolfsfeld, Elad Segev, and Tamir Sheafer. Social Media and the Arab Spring: Politics Comes First. <i>The International Journal of Press/Politics</i> , 18(2):115–137, 2013.
[WTG12]	Nilmini Wickramasinghe, Indrit Troshani, and Steve Goldberg. Adoption of Pervasive e-Health Solutions: The Need for an Appropriate Regulatory Framework. In <i>AMCIS 2012 Proceedings</i> , 2012.
[Zub19]	Shoshana Zuboff. The age of surveillance capitalism: The fight for a human future at the new frontier of power. Profile books, London, 2019.