

650.011 (24S) Social, Ethical and Legal Aspects of Artificial Intelligence and Cybersecurity

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Content and aims of the course

The VC provides for baseline definitions of what 'social' and 'ethical' means in the context of technology design, development and use. The lectures and discussions concerned with the social and ethical aspects of AI & Cybersecurity overlap in various ways, since part of the VC relies on integrated, interdisciplinary approaches as developed under the research and policy agenda of 'Responsible Research and Innovation' (RRI). From the viewpoint of RRI, we will, for instance, address the following question: who or what is responsible for fatal accidents, and other undesirable socio-ethical consequences from running (semi-)autonomous systems, such as 'self-driving' cars? Their design, development and governance require the input and coordination of many different actors, including programmers and modeling experts, car manufacturers and dealers, car owners and drivers, as well as transport and traffic experts. We discuss and analyze such complex situations of distributed responsibility for AI solutions, and what such complex entanglements imply for the roles and responsibilities of AI designers, developers and other AI experts. In a similar way, we address complex ethical situations in Cybersecurity (CS), and analyze the implications for the roles and responsibilities of CS experts. Further, we will explore issues that arise from a perspective of legal theory in these cases.

Start: 08.03.2024

When: 10:00-13:15 (with exceptions, see below)

Where: see details below

Grading Information

In their papers and presentations, the students will show that they have acquired a good understanding of the challenges and possibilities provided by digital technologies, esp. algorithms and artificial intelligence, in regard to ethical, legal, and social aspects. Further they will show that they are able to make arguments for or against certain applications based on these concepts.

The reflection papers will show that the students have actively engaged with the reading.

The grade will consist of:

- 25% reflection papers
- 25% presentation
- 50% open book exam

All of the tasks have to be fulfilled in order to get a positive grade.

Topics and Literature

Date	Time and Place	Topic
08.03.2024	10:00-11:30, f2f	<p>Introduction</p> <p>Overview of the course, framing the problem, and discussing why we should care. Organizational issues, starting discussion, and Q&A.</p>
12.03.2024	09:30-12:45, online	<p>Technology as political actor: between ethics, law, and societal issues.</p> <p>What does it mean to say that technology is political? That code is law? Or that technology is social? In this session we will look at different perspectives on the social, legal, and ethical normativity when it comes to technology and how we can address them.</p> <p>Literatur: Hildebrandt, M. (2008). Legal and Technological Normativity: More (and less) than twin sisters. <i>Techné: Research in Philosophy and Technology</i>, 12(3), 169–183. https://doi.org/10.5840/techne20081232; Winner, L. (1980). Do artifacts have politics? <i>Daedalus</i>, 19(1), 121–136.</p> <p>Further: Latour, B., & Venn, C. (2002). Morality and Technology. <i>Theory, Culture & Society</i>, 19(5–6), 247–260. https://doi.org/10.1177/026327602761899246; Latour, B. (1994). On Technical Mediation. <i>Common Knowledge</i>, 3(2), 29–64; Nissenbaum, H. (2001). How computer systems embody values. <i>Computer</i>, 34(3), 120–119. https://doi.org/10.1109/2.910905</p>
15.03.2024	10:00-13:15, online	<p>AI & the Transformation of Society</p> <p>The impact of AI specifically - and digitalization in general - on society can be observed on different levels: on the macro level, where whole societal sectors are being transformed (i.e. the public, work, etc.) and on the individual level in regards to subject formation and human autonomy. And then we have topics, like the transparency of AI systems and algorithmic discrimination that connect these issues. In this session, we will explore these impacts and learn to differentiate and reflect the level of observation.</p> <p><u>2 slots for presentations</u></p> <p>Literature: Burrell, J., & Fourcade, M. (2021). The Society of Algorithms. <i>Annual Review of Sociology</i>, 47(1), 213–237. https://doi.org/10.1146/annurev-soc-090820-020800</p>

		<p>Further: Pasquale, F. (2015). <i>The Black Box Society: The Secret Algorithms that Control Money and Information</i>. Harvard University Press; Zuboff, S. (2019). <i>The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power</i>. PublicAffairs; Bucher, T. (2012). Want to be on the top? Algorithmic power and the threat of invisibility on Facebook. <i>New Media & Society</i>, 14(7), 1164–1180. https://doi.org/10.1177/1461444812440159; Dijck, J. van, Poell, T., & Waal, M. de. (2018). <i>The Platform Society: Public Values in a Connective World</i>. Oxford University Press; Beer, D. (2017). The social power of algorithms. <i>Information, Communication & Society</i>, 20(1), 1–13. https://doi.org/10.1080/1369118X.2016.1216147; Burrell, J. (2016). How the machine ‘thinks’: Understanding opacity in machine learning algorithms. <i>Big Data & Society</i>, 3(1), 2053951715622512. https://doi.org/10.1177/2053951715622512;</p>
<p>22.03.2024</p>	<p>10:00-13:15, online</p>	<p>AI as Actor: between Accountability and Autonomy</p> <p>Machine learning and AI are posing new challenges to our understanding of ethics - even in different approaches within ethics. The trolley problem, which is often referred to in e.g. self-driving cars, illustrates this very well. These systems make decisions either based on given rules or by inferring these rules from data. Thus, we need to a) reflect on the ethics decisions encoded and b) think about who is accountable for actions. In this session, we will discuss these issues based on various ideas of “ethics”.</p> <p>Topics are:</p> <ul style="list-style-type: none"> ● Trolley Problem actualized. Self-driving cars as a problem? ● Self-learning machines and the issue of accountability. ● Autonomous weapons as moral machines? <p><u>2 slots for presentations</u></p> <p><u>Literature:</u> Awad, E., Dsouza, S., Kim, R., Schulz, J., Henrich, J., Shariff, A., Bonnefon, J.-F., & Rahwan, I. (2018). The Moral Machine experiment. <i>Nature</i>, 563(7729), Article 7729. https://doi.org/10.1038/s41586-018-0637-6;</p> <p>Also look at: https://www.moralmachine.net/</p> <p><u>Further:</u> Amoores, L. (2009). Algorithmic War: Everyday Geographies of the War on Terror. <i>Antipode</i>, 41(1), 49–69. https://doi.org/10.1111/j.1467-8330.2008.00655.x; Ananny, M. (2016). Toward an Ethics of Algorithms: Convening, Observation, Probability, and Timeliness. <i>Science, Technology, & Human Values</i>, 41(1), 93–117. https://doi.org/10.1177/0162243915606523; Suchman, L. (2020). Algorithmic warfare and the reinvention of accuracy. <i>Critical Studies on Security</i>, 8(2), 175–187. https://doi.org/10.1080/21624887.2020.1760587; Asaro, P. (2020). Autonomous weapons and the ethics of artificial intelligence. <i>Ethics of Artificial Intelligence</i>, 212.</p>

<p>09.04.2024</p>	<p>09:30-12:45, online</p>	<p>From the problem of regulating AI to AI as regulation</p> <p>AI and digital technologies are often subject to regulation efforts. Yet, how we can grasp these technologies in legal and regulatory efforts is not so straightforward. At the same time, AI and Cybersecurity are not only subject to regulation but also become effective as regulation itself. It has impact on our daily lives and is also used by the state to regulate and steer social behavior</p> <p>In this session we will look at</p> <ul style="list-style-type: none"> • challenges connected with regulating AI, algorithms, and Cybersecurity issues. • how AI and digitalization in general controls an increasing number of social domains <p><u>2 slots for presentations</u></p> <p>Literature: Angwin, J., Larson, J., Mattu, S., & Kirchner, L. (2016, May 23). Machine Bias: There’s Software Used Across the Country to Predict Future Criminals. And it’s Biased Against Blacks. ProPublica. https://www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing</p> <p>Further: Wachter, S., & Mittelstadt, B. (2018). A Right to Reasonable Inferences: Re-Thinking Data Protection Law in the Age of Big Data and AI (SSRN Scholarly Paper ID 3248829). Social Science Research Network. https://papers.ssrn.com/abstract=3248829;; Smuha, N. A. (2021). From a ‘race to AI’ to a ‘race to AI regulation’: Regulatory competition for artificial intelligence. <i>Law, Innovation and Technology</i>, 13(1), 57–84; Turner, J. (2018). <i>Robot Rules: Regulating Artificial Intelligence</i>. Springer; Veale, M., & Brass, I. (2019). Administration by Algorithm? Public Management Meets Public Sector Machine Learning (SSRN Scholarly Paper ID 3375391). Social Science Research Network. https://papers.ssrn.com/abstract=3375391; Galloway, A. R. (2004). <i>Protocol: How control exists after decentralization</i>. MIT Press; Hildebrandt, M., & Vries, K. D. (2013). <i>Privacy, Due Process and the Computational Turn: The Philosophy of Law Meets the Philosophy of Technology</i> (1st ed.). Taylor & Francis Ltd; Corbett-Davies, S., Pierson, E., Feller, A., & Goel, S. (n.d.). A computer program used for bail and sentencing decisions was labeled biased against blacks. It’s actually not that clear. Washington Post. Retrieved September 28, 2020, from https://www.washingtonpost.com/news/monkey-cage/wp/2016/10/17/can-an-algorithm-be-racist-our-analysis-is-more-cautious-than-propublicas/</p>
<p>12.04.2024</p>	<p>10:00-13:15, online</p>	<p>Cybersecurity as societal and legal problem</p> <p>Cybersecurity has always been a central concern in political debates - with a long history in questioning the state's influence on crypto algorithms (e.g. DES), the control of cybersecurity exports, and the aim to circumvent security infrastructures to enable law enforcement. In this session we will look at the (by now) historical examples of the crypto wars of the last century, examples like the now proposed chat control regulation on EU level, and the issue of legacy systems issues for society, law, and even ethics (of care).</p>

		<p><u>2 slots for presentations</u></p> <p>Literature: Hildebrandt, M. (2013). Balance or Trade-off? Online Security Technologies and Fundamental Rights. <i>Philosophy & Technology</i>, 26(4), 357–379. https://doi.org/10.1007/s13347-013-0104-0</p> <p>Further: Amoores, L., & Raley, R. (2017). Securing with algorithms: Knowledge, decision, sovereignty. <i>Security Dialogue</i>, 48(1), 3–10. https://doi.org/10.1177/0967010616680753; Chan, J., & Bennett Moses, L. (2017). Making Sense of Big Data for Security. <i>The British Journal of Criminology</i>, 57(2), 299–319. https://doi.org/10.1093/bjc/azw059; Fuchs, C. (n.d.). Societal and Ideological Impacts of Deep Packet Inspection Internet Surveillance. <i>Information, Communication & Society</i>, 0(0), 1–32. https://doi.org/10.1080/1369118X.2013.770544; Möllers, N. (2017). The Mundane Politics of ‘Security Research.’ <i>Science & Technology Studies</i>, 14–33. https://doi.org/10.23987/sts.61021; Ermoshina, K., & Musiani, F. (2022). Concealing for Freedom: The Making of Encryption, Secure Messaging and Digital Liberties. Mattering Press. https://doi.org/10.28938/9781912729227; Möllers, N. (2021). Making Digital Territory: Cybersecurity, Techno-nationalism, and the Moral Boundaries of the State. <i>Science, Technology, & Human Values</i>, 46(1), 112–138. https://doi.org/10.1177/0162243920904436</p>
16.04.2024	09:30-12:45, online	<p>Cybersecurity, AI, and ... democracy?</p> <p>Recent years have shown that AI is not only an issue for society at large but also has an ever growing impact on existing democracies. While issues like filter bubbles and the fragmentation of public discourse are - by now - well known, AI and Cybersecurity are also important in regards to political decision making based on expert systems and microtargeting in political communication. Further, the power of digital technologies to influence social and political behavior also raises questions of civil disobedience and the possibility of resistance in digital democracies. In this session we therefore address the democratic dimension of AI and Cybersecurity.</p> <p><u>2 slots for presentations</u></p> <p>Literature: Nemitz, P. (2018). Constitutional democracy and technology in the age of artificial intelligence. <i>Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences</i>, 376(2133), 20180089. https://doi.org/10.1098/rsta.2018.0089</p> <p>Further: Stahl, B. C., & Wright, D. (2018). Ethics and Privacy in AI and Big Data: Implementing Responsible Research and Innovation. <i>IEEE Security Privacy</i>, 16(3), 26–33. https://doi.org/10.1109/MSP.2018.2701164; Pariser, E. (2012). <i>The filter bubble: How the new personalized Web is changing what we read and how we think</i>. Penguin Books/Penguin Press; Sunstein, C. R. (2009). <i>Republic.com 2.0</i>. Princeton University Press; Berg, S., & Hofmann, J. (2021). Digital democracy. <i>Internet Policy Review</i>, 10(4). https://policyreview.info/articles/analysis/digital-democracy; Borgesius, F. J. Z., Trilling, D., Möller, J., Bodó, B., Vreese, C. H. de, & Helberger, N. (2016). Should we worry about filter bubbles? <i>Internet Policy Review</i>.</p>

		<p>https://policyreview.info/articles/analysis/should-we-worry-about-filter-bubbles; Djefal, C. (2019). AI, Democracy and the Law. In A. Sudmann (Ed.), The Democratization of Artificial Intelligence. Net Politics in the Era of Learning Algorithms. (pp. 255–284). Transcript; Hacker, K. L., & Dijk, J. A. G. M. van. (2001). Digital Democracy: Issues of Theory and Practice. SAGE PUBLN; Kubitschko, S. (2015). The Role of Hackers in Countering Surveillance and Promoting Democracy. Media and Communication, 3(2), 77–87. https://doi.org/10.17645/mac.v3i2.281</p>
19.04.2024	10:00-13:15, online	<p>Outlook and final discussion: what can be done? What is the way forward?</p> <p>In this session, we will take a brave and optimistic view into the future and discuss what can be done. Departing from the complex - and sometimes complicated - issues that arise in social, ethical, and legal aspects of AI and Cybersecurity, we discuss different approaches to tackle these issues. This will also bridge the contents of this course to ideals of responsible innovation and the democratization of technology. Topics covered are:</p> <ul style="list-style-type: none"> a) Politics in Design b) Democratization of Technology c) Resistance is (not?) futile <p>Since this is the closing session and the discussion functions as a bridge to other courses, there are no readings for this session</p> <p>In the second half of the session there will be the open book exam (60min).</p>

Requirements for passing the course

To pass the course, students have to fulfill all of the following tasks:

- Read the required (and, where applicable, group-assigned) readings
- Upload the reflection papers
- Hold a presentation about the chosen topic
- Take the open book exam

Reading

You are expected to do the required readings ahead of time and spend time thinking about the material before you come to class. Adequate preparation is vital for meaningful participation in our discussions. Please make sure you allocate sufficient time to read and digest the assigned texts. Please take notes on what you've read, and upload them in a clean way as the assigned reflection papers **the evening before** class, **i.e. 18:30h** To get the most out of class discussion, you may want to structure your notes along questions such as these:

- What are the most exciting or interesting points raised by the readings?
- Am I persuaded by this argument? If so, why? If not, why not, and what could make it more convincing?
- What questions do these readings raise for me?
- What, if anything, do I not understand? (Identifying points of confusion is a valid and important contribution to class discussion!)

Presentation

In addition to regular participation, you will present your chosen topic in a group presentation (3-4 people). Make sure your presentation summarizes the topic you have chosen, why this is important, and the argument you want to make in your seminar paper. Best case scenario, you describe a case that reflects issues and topics discussed in the respective session and raise some questions that you want to address/discuss in class. In the unlikely case that no topic comes to mind, you can approach me to find an appropriate topic. In the marked sessions there are two slots for group presentations. The presentation should take roughly 15 minutes, after which we will collectively discuss the chosen topic/case and relate it to the seminar topics.

Open book exam

In the open book exam, you will demonstrate that you have understood central concepts discussed in the VC and that you are able to apply them to small cases in meaningful ways. Open book exam means that in order to answer the questions you may draw on your lectures notes, the slides that have been provided on Moodle as well as on the required literature and your reflection papers.