ETHICS OF EMERGING TECHNOLOGIES

Aims, contents, and methods

Emerging technologies like AI, the Internet of Things, and Blockchain Technology, have an increasingly transformative impact on people and society. In this course, students will be introduced to the different ways to theorise emerging technology, reflect on its ethical impacts, and use practical tools to integrate ethical reflection in day-to-day projects.

The course consists of three parts. The first part covers the basics: presenting major ethical issues with emerging technologies from a historical perspective, explaining the link between ethical theories and technology, and presenting different ways to think about technological mediation. The second part focuses on ethics of particular types of emerging technologies: of artificial intelligence (e.g., deep learning), artificial life (e.g., genetic modification) and existential machines (e.g., the atomic bomb). The third part contextualises the ethics of emerging technologies in a discussion of three global challenges: global citizenship and human rights, climate change, and violence.

The course uses methods of philosophical reflection, argumentation, empirical and historical research, and applied ethics.

Teacher

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Assessment

- 50% of the grade will consist of five bi-weekly exercises based on the lectures and the readings.

- 50% of the grade will be based on a final writing assignment. This assignment consists of writing a 'long-read' journalistic article, as can be found in The New York Times or the Guardian, which discusses a particular issue related to ethics of emerging technologies.

Sessions	
Session # 1 09.03.2022 13:15-15:15	Topic: Contemporary Challenges of Emerging Technologies Sup-topics: • Examples of contemporary issues with emerging technologies • Course objectives • Course audience; technologists and philosophers • Course overview • Assessment **Description:** This course is targeted both at students in science and engineering who want to get acquainted with the basics of philosophy and ethics of emerging technologies, and at philosophy students who want to know more about the impacts of emerging technologies and how to practically address them. In this first class, we will engage with prominent examples of emerging technologies and their impacts on contemporary society; such as the Cambridge Analytica voting manipulation, the CRISPR babies scandal, COVID19 tracking

app surveillance, and self-driving cars. The aim of this lesson is to set the stage and make students aware and passionate about the ethics of emerging technologies.

Questions:
- What are exemplary ethical issues of emerging technologies?
- Can you recall any recent news item about an ethical impact of an emerging technology?
- What do you think are the most urgent ethical challenges we will face in the future when it comes to emerging technologies?
- Do you feel yourself affected by technologies in your everyday life?

Pre-class assignment:
No pre-class assignment

Core reading:
- Handout 1.

Optional readings:
No optional readings for this class.

Session # 2	Topic: From Emerging Technology to Ethics
09.03.2022	
	Sup-topics:
15:15-17:15	• Introduction tale of Daedalus

Topic: From Emerging Technology to Ethics

Sup-topics:
- Introduction tale of Daedalus
- Origins of ethical thinking in technical practices
- Cybernetics as the current paradigm: machine, life, intelligence
- Example 1: Oppenheimer
- Example 2: Hippocrates
- Example 3: Wiener

Description:
Thinking about the ethics of technology rarely originates from philosophy departments, and much more often starts with practitioners. Practitioners who apply their technical skills and design new technologies are most aptly aware of the possible dangers of their creations. We start with the tragic Greek story of Daedalus, who was made aware of the dangers of his invention because of the heartbreaking death of his son, Icarus. We then turn to three exemplary historical practitioners who shaped our ethical thinking about technology. We start with Robert Oppenheimer, who contributed to technology, the atomic bomb, that is capable of wiping out humankind; considering his famous words "I am death, destroyer of worlds". We then turn to Hippocrates, perhaps the world's first applied ethicist, who was a practitioner of medicine and formulated an ethical oath that in some form survives until this day. Finally, we meet Norbert Wiener, the founder of cybernetics, who stood at the cradle of thinking about the ethical impacts of artificial intelligence. The aim of this class is to show the importance of practice for ethics of emerging technologies, and to explain how some of the major ethical "tools", professional codes, ethical oaths, and ethical impact assessment, find their origins in practice.

Questions:
- Why does ethical thinking in particular technological domains often originate from technical practice?
- What is an ethical oath? Why is it important for medical ethics?

- What has been the foremost ethical concern of the pioneers in artificial intelligence? Why?
- Explain the famous words by Oppenheimer "I am death, the destroyer of worlds". What ethical perplexity did he face?

Post-class assignment 1:
1. Imagine you working in an IT department of a large bank. You are charged with setting up an ethical oath for developers in this department.
2. Go online and search for typical ethical challenges that developers of IT products at banks face.
3. Formulate an ethical oath for your department. You can draw from different examples of ethical oaths, like the one for medical ethics, but it must be specific to your particular context. Make sure to add sources to the prescriptions in your ethical oath. Do not exceed 300 words.

Submission deadline: 18.03.2022

Core reading:
- Handout 2.
- Blok, Vincent. 2013. "The Power of Speech Acts: Reflections on a Performative Concept of Ethical Oaths in Economics and Business." *Review of Social Economy* 71(2):187–208.

Optional readings:
- Tavani, Herman. 2001. "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.
- Dusek, Val. 2006. *Philosophy of Technology: An Introduction*. Malden: Blackwell Publishing. Chapter 3 – Technocracy.

Session # 3 10.03.2022 13:15-15:15	Topic: From Ethics to Emerging Technology Sup-topics: • Introduction tale of Prometheus • How ethical doctrines emerged from a particular socio-technical context • Introducing ethical doctrines as modes of ethical argumentation • Example 1: Aristotle, introduction to virtue ethics • Example 2: Kant, introduction to deontology • Example 3: Bentham, introduction to utilitarianism **Description:** While ethics of technology has originated from practitioners, philosophical theories of ethics also have been affected by the science and technology at the time of their inception. They are part of what Yuk Hui calls "cosmotechnics", the unification of a cosmological and moral understand of the world through technical activities. We will see how the three major approaches in ethics all resonate with the scientific and technological context in which they were formulated. We start by considering virtue ethics, and its origins in Western philosophy in the works of Aristotle. We discuss how Aristotle's ethics rests on a crucial analogy between technical skill and ethical virtue, and why it was so important for him to establish their fundamental difference. Continuing, we turn to Immanuel Kant and deontological ethics. We explore how the idea of a moral law has been influenced by the mechanistic

	natural philosophy of Newton and other enlightenment thinkers. Finally, we arrive at Jeremy Bentham's utilitarian ethics, and the way it has been affected by the idea of technical feedback, as inspired by the architecture of the Panopticon. The aim of this class is to offer an unconventional introduction to ethical theory, situating it in a reverse intellectual development; of science and technology impacting our ethical thinking. **Questions:** - What is the difference between virtue and skill? Why does it matter? - Why is the categorical imperative a moral law? - What is the connection between risk assessment and utilitarian ethics? - In your opinion, to what extent do you think that your view on ethics has been affected by the technologies you use and are surrounded with? **Pre-class assignment:** No pre-class assignment **For the final assignment:** Think of an emerging technology to discuss in your long-read article. Send me the topic by email. Deadline: 04.04.2022. Core reading: - Handout 3. - Wolff, Ernst. 2016. "'Technology' as the Critical Social Theory of Human Technicity." *Journal of Philosophical Research* 41:333–69. Optional readings: - Rehg, W. 2015. "Discourse Ethics for Computer Ethics: A Heuristic for Engaged Dialogical Reflection." *Ethics and Information Technology* 17(1):27–39. - Vallor, Shannon. 2010. "Social Networking Technology and the Virtues." *Ethics and Information Technology* 12(2):157–70. - August, Vincent. 2021. "Network Concepts in Social Theory: Foucault and Cybernetics." *European Journal of Social Theory* 1–21. - Gaus, Gerald F. 2001. "What Is Deontology? Part One: Orthodox Views." *Journal of Value Inquiry* 35(1):27–42. - Hui, Yuk. 2020. "Machine and Ecology." *Angelaki - Journal of the Theoretical Humanities* 25(4):54–66.
Sessions # 4 10.03.2022 15:15-17:15	Topic: Values and Technology Sup-topics: - Artefacts have politics - What are values? - Need to be empirically informed; inter-disciplinarity - Example 1: Latour - Example 2: Verbeek - Example 3: Friedman **Description:** Contemporary thinking concerning technology is heavily influenced by the idea that technology is "not neutral", that is has values. Yet, what technology offers instead of its neutrality is disputed. There are views of technology determining society, society

determining technology, and both co-constructing one-another. We will explore what it means to "do" philosophy of technology in this context. Emphasis will be put on the need for this type of philosophy of be "empirically informed". Philosophers need to engage with history, anthropology, and ethnography – amongst others – to get a full picture of what is called "technological mediation". We then survey three approaches to technical mediation: the anthropological approach of Latour and the actor network theory, the philosophical approach of Verbeek called postphenomenology, and the practice-oriented approach by Friedman known as "value sensitive design". The aim of this class is to make students acquainted with the basics of philosophy of technology and different ways to reflect on technological mediation.

Questions:
- What is a value? What does it mean for a value to be embedded in a technology?
- What are the different perspectives on the relation between technology and society?
- What is technological mediation? Can you give an example?
- What are some of the main approaches to technological mediation?

Pre-class assignment 2:
1. Imagine you are part of a design team in a company. Imagine what product you are designing – you can pick any product you can think of.
2. Run through an exercise of the value sensitive design methodology:
   a. Consider the core values to embed in the design and conceptualise them.
   b. Consider the most important stakeholders and their views on the core values.
   c. Think of ways to incorporate the stakeholder values in the design of your product
3. Write this down in a report that does not exceed 500 words. Use links and references to substantiate your ideas.

Submission deadline: 18.03.2022

Core reading:
- Handout 4.
- Friedman, Batya and P. Kahn. 2002. "Value Sensitive Design: Theory and Methods." *University of Washington Technical* (December):1–8.

Optional readings:
- Winner, Langdon. 1980. "Do Artifacts Have Politics?" *Daedalus* 109(1):121–36.
- Latour, Bruno. 1994. "On Technical Mediation - Philosophy, Sociology, Genealogy." *Common Knowledge* 3(2):29–64.
- Kyrre, Jan, Berg Olsen, and Vincent F. Hendricks. 2010. "A Companion to the Philosophy of Technology." in *A Companion to the Philosophy of Technology*. Chapter 64 – Technology and Ethics.

Session # 5 12.05.2022 13:15-15:15	Topic: Technology and the Human Condition Sub-topics: • Introduction tale of Frankenstein • Technology and the meaning of human existence • Technology as a transcendental • Example 1: Marx and alienation

	- Example 2: Foucault and control - Example 3: Arendt and totalitarianism **Description:** While technology mediates our experience and understanding of the world, it also tells us something about ourselves. In 2016, the Deepmind program AlphaGo beat the world champion in the complex game Go, thereby raising questions about the uniqueness of us, humans, and about the capacity of technologies to change our self-image. As the myth of Prometheus has shown us before, technology in some ways defines who we are as human beings. We will look at some great thinkers who have grappled with the role of technology in shaping the human condition. We start with Marx, who at the beginning of the industrial revolution explained how technology can "alienate" us from ourselves and the things that surround us. We then turn to Foucault, whose insights have shown us how technologies and techniques of the body have shaped "biopolitics" and how this has led to a society of control. Finally, with Arendt, we explore the link between technology and totalitarianism. She saw that technologies are not only used by totalitarian regimes, but also contribute to a "totalizing" form of life, one that reduces human activity to a form of labor and denies us our political potential. The aim of this class is to discuss how technologies have shaped ourselves and the perception of ourselves; how it defines our human condition. **Questions:** - Do you think your existence is in part defined by technology? If so, can you explain? - What are alienation and reification? Can you give an example of both in the modern world of technology? - What does it mean to move from a disciplinary to a control society? - Why can technology be totalizing? Does this idea correspond with your own experience of the way we live with technology? **Pre-class assignment:** No pre-class assignment **For the final assignment:** Write a pitch for your long-read piece of no more than 300 words. Send it to me by email. Deadline: 25.04.2022. Core reading: - Handout 5. - Lozanoska, Jana. 2020. "Temporality, Technology and Justice in Hannah Arendt: A Critical Approach." in *Ethics and Politics of Space for the Anthropocene*. Cheltenham: Edward Elgar Publishing Limited. Optional readings: - Feenberg, Andrew. 2010. "Ten Paradoxes of Technology." *Techne* 14(1):3–15. - Deleuze, Gilles. 1992. "Postscript on the Societies of Control." *October* 59:3–7.
Session # 6 12.05.2022 15:15-17:15	Topic: Responsible Innovation Sub-topics: - The meaning and challenges of Responsible Innovation - Backward-looking responsibility - Forward-looking responsibility - Anticipation, Analysis, Remediation

- Participatory Design
- Citizen Engagement

Description:
Nowadays, the ethical reflections and interventions on the design, governance, and use of emerging technologies are captured under the heading of "responsible innovation". This term calls for a questioning of the two concepts of responsibility and innovation. Focusing on responsibility, we explore how this can be about holding someone to account for something that has happened, or backward-looking responsibility. At the same time, we explore what it means to be responsible for things that have not yet happened; to respond to forward-looking responsibility. We also reflect on some problems with responsibility, like the problem of many hands, when countless people share responsibility for a problem like climate change. Continuing, we explore some practical frameworks and tools to anticipate ethical impacts, analyze them, and address them. We also look at important related practices of participatory design and citizen engagement, which turns responsible innovation also into a political exercise, one that requires deliberation and consultation.

Questions:
- Why is responsible innovation not only a matter of ethics but also of politics?
- What are the established types of responsibility? Why are they different?
- What is participatory design? How can it be organized?
- What is the role of citizen engagement in responsible innovation? Why is it important?

Pre-class assignment 3:
1. Go the EU page on responsible innovation in European Research projects (https://ec.europa.eu/programmes/horizon2020/en/h2020-section/responsible-research-innovation) and answer the following questions:
2. What concepts of responsibility and innovation are used here? Try to link your discussion to this week's reading.
3. Make a case for the benefits and the drawbacks of this responsible innovation policy.
4. Shortly, mention one or two ways in which you think this policy could be improved.
5. Write a short report on the above points, of no more than 400 words.

Submission deadline: 09.05.2022

Core reading:
- Handout 6.
- Blok, Vincent and Pieter Lemmens. 2015. "The Emerging Concept of Responsible Innovation. Three Reasons Why It Is Questionable and Calls for a Radical Transformation of the Concept of Innovation." Pp. 1–303 in *Responsible Innovation 2: Concepts, Approaches, and Applications*, edited by B. J. Koops, I. Oosterlaken, H. Romijn, T. Swierstra, and J. van den Hoven. Heidelberg: Springer.

Optional readings:
- Jonas, Hans. 1973. "Technology and Responsibility: Reflections on the New Tasks of Ethics." *Social Research* 40(1):31–54.
- Owen, R., P. Macnaghten, and J. Stilgoe. 2012. "Responsible Research and Innovation: From Science in Society to Science for Society, with Society." *Science and Public Policy* 39(6):751–60.

	• Blok, V., L. Hoffmans, and E. F. M. Wubben. 2015. "Stakeholder Engagement for Responsible Innovation in the Private Sector: Critical Issues and Management Practices." *Journal on Chain and Network Science* 15(2):147–64.
Session # 7 13.05.2022 13:15-15:15	Topic: Ethics of the Bomb Sub-topics: • Intro narrative of Pandora's Box • Existential risks • Precautionary principle • Wisdom and phronesis • International cooperation • Standards and regulations **Description:** We return to Oppenheimer, and the atomic bomb. More generally, we look into the capacity of technology to disrupt our environment, our societies, and political systems. In other words, we turn to "existential risks" posed by emerging technologies. We consider these risks beyond alarmistic narratives, as calling for a prudential stance. Prudence means that we have to be extremely careful with systemic impacts of emerging technologies. In this context, we explore the precautionary principle and practical wisdom, two necessary aspects of dealing in a good way with existential risks. We also look at how scientists and engineers do not stand alone in facing these risks. On the contrary, an impressive level of international cooperation and standard setting – think of agreements on nuclear arms – have led to a world with extremely dangerous technologies that can nonetheless be managed. The aim of this class is to familiarize students with the importance of prudence and the pre-cautionary principle in ethics of emerging technologies, and to pay attention to international standards and regulations in approaching ethical impacts. **Questions:** • What are existential risks? Why should we care about them? • What is the precautionary principle? How can it be applied? • What is prudence or practical wisdom? Does this square with the nature of innovation? • Give some examples of initiatives in international cooperation and standard setting that have been crucial in ensuring safety of emerging technologies. **Pre-class assignment:** No pre-class assignment Core reading: • Handout 7. • Bostrom, Nick. 2013. "Existential Risk Prevention as Global Priority." *Global Policy* 4(1):15–31. • Coeckelbergh, Mark. 2016. "Responsibility and the Moral Phenomenology of Using Self-Driving Cars." *Applied Artificial Intelligence* 30(8):748–57. Optional readings: • Taleb, Nassim, Rupert Read, Raphael Douady, Joseph Norman, and Yaneer Bar-Yam. 2000. *The Precautionary Principle.* Vol. 18.

- Patenaude, Johane, Georges-Auguste Legault, Jacques Beauvais, Louise Bernier, Jean-Pierre Béland, Patrick Boissy, Vanessa Chenel, Charles-Étienne Daniel, Jonathan Genest, Marie-Sol Poirier, and Danielle Tapin. 2015. "Framework for the Analysis of Nanotechnologies' Impacts and Ethical Acceptability: Basis of an Interdisciplinary Approach to Assessing Novel Technologies." *Science and Engineering Ethics* 21(2):293–315.

Session # 8 13.05.2022 15:15-17:15 *Guest Lecturer: Arianna Dinni*	Topic: Ethics of Thinking Machines Sub-topics: • Thinking machines (AI, robots) • Data Science • Code and Interpretation • Privacy • Manipulation • Standards and regulations **Description:** We return to Wiener, and the making of "artificial life." One of the defining technologies of our time is known as artificial intelligence (AI). In fact, although we focus on AI in this class, we will more generally discuss data science and its application. We start by considering how data science has affected our ways of knowing: how it has perhaps made theory obsolete (at least, that is what some claim) and has produced a "black box" that we cannot fully understand. We turn to the central problem of AI, as explored by Wiener, that because of its "literalness", it is difficulty to deal with ambiguity and interpretation. We then move to some of the core ethical concerns that arise from the nature of AI and data science applications: privacy and manipulation. Finally, we discuss some practical tools, standards, and regulation that you will want to know about in doing ethics of data science and AI. The aim of this class is to introduce students to the ethics of AI and data science; its core principles, problems, and standards and regulations. **Questions:** • What is artificial intelligence? How does it relate to the more general field of data science applications? • What is the black box problem? Why is this problem particularly pressing for AI systems? • What are the core principles of AI ethics? • What are the most important standards and regulations for AI and data science ethics? **Pre-class assignment 4:** 1. Imagine a roundtable in which proponents and opponents of a predictive policing tool meet. The tool uses big data to calculate risk scores of recidivism, i.e., the risk that a known criminal would commit a crime again. 2. Write a short argument in favour of the tool. You can draw from different sources in your argument (see the readings). 3. Write a short argument against the tool. Also here, you can draw from different sources. 4. Finally, shortly write down your personal opinion about the tool. Try to find a personal motivation in favour or against it. 5. Write the above down in a short report of up to 400 words.

	Submission deadline: 09.05.2022 Core reading: • Handout 8. • Coeckelbergh, Mark. 2020. *AI Ethics*. Cambridge, Massachusetts: MIT Press. Chapter 7. • Pham, Adam and Clinton Castro. 2019. "The Moral Limits of the Market: The Case of Consumer Scoring Data." *Ethics and Information Technology* 21(2):117–26. Optional readings: • O'Neill, Cathy. n.d. *Weapons of Math Destruction*. New York: Crown. Chapter 1. • Nissenbaum, Helen. 2004. "Privacy as Contextual Integrity." *Washington Law Review* 101–39. • Kitchin, Rob. 2014. "Big Data, New Epistemologies and Paradigm Shifts." *Big Data and Society* 1(1):1–12. • Mittelstadt, Brent Daniel and Luciano Floridi. 2016. "The Ethics of Big Data: Current and Foreseeable Issues in Biomedical Contexts." *Science and Engineering Ethics* 22(2):303–41.
Session # 9 09.06.2022 13:15-15:15	Topic: Ethics of Life Making Sup-topics: • Bioethics • Eugenics • Genetic engineering • Therapy versus enhancement • Standards and regulations **Description:** We return to Hippocrates, and the ethics of life making. Advances in biotechnology are giving humans "God like" powers, to change our genetic makeup, to design our own babies, and to create extremely dangerous pathogens. We discuss the history of ethical thinking concerning the making of life, and how this has gone extremely wrong in the development of the Eugenics movement and the effect this had on the atrocities committed in the Second World War by the Nazis. We consider how some old ideas are now resurfacing in a different guise and how they are discussed in society. Discussions focus on the distinction between "therapy" and "enhancement", and call into question what it means to be a "normal" human being, to become "transhuman" or "posthuman". Finally, we discuss how international standards and regulations have been developed to deal with the risks of life making, such as the Declaration of Helsinki. The aim of this class is to grapple with the risks and opportunities of humanity's very new capacity to tinker with the nature of life itself, and to understand ways to deal with it in an ethical manner. **Questions:** • What does it mean to "play God." Do you think this is problematic, and why? • Is a conservative stance on biotechnology necessarily a religious one? Why (not)? • What is transhumanism? How is it different from posthumanism? • What are the most important international agreements and standards that manage the ethics of emerging life making technologies?

	Pre-class assignment: No pre-class assignment **For the final assignment:** submit the first, 2000 words draft of your long-read piece. Send it to me by email. Deadline: 30.05.2022. Your piece will be send out to a colleague who will review it. Core reading: - Handout 9. - Lin, Patrick and Fritz Allhoff. 2008. "Against Unrestricted Human Enhancement." *Journal of Evolution and Technology* 18(1):35–41. Optional readings: - Pearson, Karl. 1930. "On a New Theory of Progressive Evolution." *Annals of Human Genetics* IV. - Elsner, D. 2006. "Just Another Reproductive Technology? The Ethics of Human Reproductive Cloning as an Experimental Medical Procedure." *Journal of Medical Ethics* 32(10):596–600.
Session # 10 09.06.2022 15:15-17:15	Topic: Citizenship and Emerging Technology Sub-topics: - Social media and public discourse - Technology and identity - Technology and human rights - Law and Technology - Example 1: Blockchain technology - Example 2: Social Credit Systems **Description:** In the last part of the course, we do not discuss particular technologies, but contexts in which they are deployed. First, we focus on citizenship, and the way emerging technologies are changing it. We look at the use of technologies to shape our identities as citizens, from passports, via biometrics, to self-sovereign identities. We also look at the ethical issues created by these technologies, like the framing of the "foreigner". We then turn to the impact of emerging technologies on the exercise of human rights; considering how our rights are increasingly conditioned on being connected and evaluated by machines. We also consider how emerging technologies are shaping the law; how they introduce the "code is law" principle and automate administrative and judicial decisions. Looking to the future, we discuss the impact of two particular emerging technologies on citizenship: blockchain technology and social credit systems. The aim of this class is to make students aware of the impacts of emerging technologies on citizenship and the state, and ways to reflect on these impacts. **Questions:** - What are some important ethical issues resulting from the use of emerging technologies in the management of citizens' identities? - How are the rights of citizens mediated by emerging technologies? - What is the impact of emerging technologies on political discourse and the functioning of democracy? - What is "code is law" and how does it affect the rule of law?

Pre-class assignment 5:
1. Conduct a case study of automated border controls. Start by collecting academic resources and new items on automated border controls. Don't take too long, but also don't rush; a few hours should be sufficient.
2. Describe what automated border controls are and how they operate.
3. Discuss some normative impacts of automated border controls on citizenship; you can pick from identity, legal status, citizens' rights, and citizen participation in political decision making.
4. Capture your case study in a short (max 600 word) report, consisting of 1) an introduction, 2) a description of the technology and its uses, 3) a discussion of its normative implications.

Submission deadline: 06.06.2022

Core reading:
- Handout 10.
- Orgad, Liav and Wessel Reijers. 2022. "How to Make the Perfect Citizen? Lessons from China's Model of Social Credit System." *Vanderbilt Journal of Transnational Law* 54(5):1087–1121.

Optional readings:
- Cardullo, Paolo and Rob Kitchin. 2018. "Smart Urbanism and Smart Citizenship: The Neoliberal Logic of 'Citizen-Focused' Smart Cities in Europe." *Environment and Planning C: Politics and Space* 0(0):1–18.
- Krivý, Maroš. 2018. "Towards a Critique of Cybernetic Urbanism: The Smart City and the Society of Control." *Planning Theory* 17(1):8–30.
- Cheney-Lippold, John. 2016. "Jus Algoritmi: How the National Security Agency Remade Citizenship." *International Journal of Communication* 10(0):22.

Session # 11 10.06.2022 13:15-15:15	Topic: Sustainability and Emerging Technology Sub-topics: • Environmental ethics • Technology and climate change • Pharmacology • Ethics of the Anthropocene • Example 1: Sustainable artificial intelligence • Example 2: Climate engineering **Description:** One of the major challenges of our time concerns the human impact on the environment. Humanity has to deal with climate change, a drop in biodiversity, and an increase in extreme weather events. Emerging technologies play an important role in this. Fossil fuel technologies have propelled many of the environmental problems we are dealing with today, but also data-driven technologies are using up vast amounts of energy that challenge sustainable living. For this reason, ethics of technology needs to interact with environmental ethics. In this context, recent work has introduced the ethics of the "anthropocene", which refers to a new geological era in which human activity is the defining factor for the way the climate behaves. We will explore the ethical implications on the climate of two developments in emerging technologies: of artificial intelligence and climate engineering.

The aim of this class is to introduce students to the basics of environmental ethics in connection with emerging technologies.

Questions:
- What is the paradoxical relation between emerging technologies and environmental problems?
- How, in your opinion, should we balance welfare and mitigation of environmental problems?
- Why do information and communication technologies use increasingly high amounts of energy?
- What, in your opinion, should an sustainable policy concerning the use and deployment of emerging technologies look like?

Pre-class assignment:
No pre-class assignment

For the final assignment: Finish your review of a colleague's long-read draft. Deadline: 13.06.2022.

Core reading:
- Handout 11.
- van Wynsberghe, Aimee. 2021. "Sustainable AI: AI for Sustainability and the Sustainability of AI." *AI and Ethics* 1(3):213–18.

Optional readings:
- Sui, Daniel Z. and David W. Rejeski. 2002. "Environmental Impacts of the Emerging Digital Economy: The e-for-Environment e-Commerce?" *Environmental Management* 29(2):155–63.
- Zwier, Jochem and Vincent Blok. 2017. "Saving Earth in Advance." *Techné: Research in Philosophy and Technology*.

Session # 12 10.06.2022 15:15-17:15	Topic: Violence and Emerging Technology

Session # 12

10.06.2022

15:15-17:15

Topic: Violence and Emerging Technology

Sub-topics:
- Technology and discrimination
- Technology and physical violence
- Technology and mental violence
- Human rights and emerging technologies
- Example 1: Autonomous weapons
- Example 2: Border controls

Description:
Emerging technologies do a lot of good: in many aspects they make us happier, healthier, and help us leading more comfortable lives. Yet, they also harbor the potential for violence. Oftentimes, this potential can be very explicit, like in the development of killer robots. Yet, violence can also be implicit, it can hide away behind discriminatory administrative practices or even addiction and mental abuse. Emerging technologies, unfortunately, play an increasingly important role in all these types of violence; be-it the developments of new weapons, algorithms with discriminatory biases, or social media that facilitate bullying and hate speech. As such, there is a need to look at the impacts of emerging technologies from a human rights perspective. We will look at two examples in particular of potentially violent

technologies: autonomous weapons and automated border controls. The aim of this class is to introduce students to the potential violence that comes with the design and deployment of emerging technologies, and ways to address this potential.

Questions:
- What are the main ethical impacts of the deployment and use of automated weapons?
- In your opinion, should automated weapons ever be used? If so, under which circumstances?
- What does it mean for an algorithm to have a discriminatory bias? Can you give an example of a negative effect this can have on people?
- Have you ever experienced violence online, or do you know someone who has? What, in your opinion, should be done about it?

Pre-class assignment:
No pre-class assignment

Core reading:
- Handout 12.
- Vallor, Shannon. 2013. "The Future of Military Virtue : Autonomous Systems and the Moral Deskilling of the Military." *5th International Conference on Cyber Conflict* (CyCon):471–86.

Optional readings:
- Yeung, Karen. 2018. "Algorithmic Regulation: A Critical Interrogation." *Regulation and Governance* 12(4):505–23.
- Wolff, Ernst. 2021. *Between Daily Routine and Violent Protest: Interpreting the Technicity of Action*. Berlin: De Gruyter.