

Adversarial Networks and Network Adversity

FILM 240

Wed 4:00-7:00
Dwinelle 226

Prof. Jacob Gaboury
calendly.com/gaboury/graduate

COURSE DESCRIPTION

This course examines the politics of digital technology with a focus on the growth of machine learning applications and contemporary network architecture. Exploring recent scholarship that looks to new methods for engaging with technical systems that operate at speeds and scales beyond phenomenal experience, we take as our focus so-called “Generative Adversarial Networks” to examine network adversity broadly speaking, tracking the ways that the Internet and neural networks have obfuscated the political claim of contemporary technology.

Required Texts

NOTE: All texts will be available via bCourses. The following books will be read in full and may be purchased as physical copies:

Amoore, Louise. *Cloud Ethics: Algorithms and the Attributes of Ourselves and Others*. Duke University Press, 2020.

Crawford, Kate. *Atlas of AI: Power, Politics, and the Planetary Costs of Artificial Intelligence*. Yale University Press, 2021.

Hong, Sun-ha. *Technologies of Speculation: The Limits of Knowledge in a Data Driven Society*. New York University Press, 2020.

Katz, Yarden. *Artificial Whiteness: Politics and Ideology in Artificial Intelligence*. Columbia University Press, 2020.

CLASS SCHEDULE

08/26

INTRODUCTION

Syllabus Presentation and General Introductions

09/02

ATLAS OF AI

Crawford, Kate. *Atlas of AI: Power, Politics, and the Planetary Costs of Artificial Intelligence*. Yale University Press, 2021.

Supplemental

Sinders, Caroline et al. *AI Explanations*. <https://ai-explanations.com/>

AI Now Institute. *A New AI Lexicon*. <https://medium.com/a-new-ai-lexicon>

Vasconcelos, Elvia. "A Visual Introduction to AI" *Künstliche Intelligenz und Medienphilosophie*. July 2020. <https://kim.hfg-karlsruhe.de/visual-introduction-to-ai/>

09/09

BEGINNINGS

Mendon-Plasek, Aaron. "Mechanized Significance and Machine Learning: Why It Became Thinkable and Preferable to Teach Machines to Judge the World." In *The Cultural Life of Machine Learning*, pp. 31-78. Palgrave Macmillan, Cham, 2021.

Pasquinelli, Matteo, and Vladan Joler. 2020. "The Nooscope Manifested: Artificial Intelligence as Instrument of Knowledge Extractivism." KIM HfG Karlsruhe and Share Lab. <https://nooscope.ai>.

Berry, David M. "Prolegomenon to a media theory of machine learning: compute-computing and compute-computed." *Media Theory* 1, no. 1 (2017): 74-87.

Supplemental

Kurenkov, Andrey. "A 'Brief' History of Neural Nets and Deep Learning." *Skynet Today*. 2020. <http://www.andreykurenkov.com/writing/a-brief-history-of-neural-nets-and-deep-learning/>.

Tch, Andrew. "The mostly complete chart of Neural Networks, explained." August 4, 2017. <https://towardsdatascience.com/the-mostly-complete-chart-of-neural-networks-explained-3fb6f2367464>

Pasquinelli, Matteo. "Three thousand years of algorithmic rituals: The emergence of AI from the computation of space." *e-flux* 101 (2019). <https://www.e-flux.com/journal/101/273221/three-thousand-years-of-algorithmic-rituals-the-emergence-of-ai-from-the-computation-of-space/>

09/16 **TECHNOLOGIES OF SPECULATION**

Hong, Sun-ha. *Technologies of Speculation: The Limits of Knowledge in a Data Driven Society*. New York University Press, 2020.

09/23 **COGNITION, EPISTEMOLOGY, HERMENEUTICS**

Cramer, Florian. "Crapularity Hermeneutics: Interpretation as the Blind Spot of Analytics, Artificial Intelligence, and Other Algorithmic Producers of the Postapocalyptic Present" in *Pattern Discrimination*. Apprich, Clemens, Florian Cramer, Wendy Hui Kyong Chun, and Hito Steyerl. Meson Press, 2018.

Hayles, N. Katherine. "The cognitive nonconscious: Enlarging the mind of the humanities." *Critical Inquiry* 42, no. 4 (2016): 783-808.

Hansen, Mark BN. "Prehensivity" in *Feed-Forward: On the Future of Twenty-First-Century Media*. University of Chicago Press, 2015.

Supplemental

Malabou, Catherine. *What should we do with our brain?*. Fordham Univ Press, 2009.

Meillassoux, Quentin. *After finitude: An essay on the necessity of contingency*. Bloomsbury Publishing, 2010.

Deacon, Terrence W. *Incomplete nature: How mind emerged from matter*. WW Norton & Company, 2011.

Hayles, N. Katherine. *Unthought*. University of Chicago Press, 2020.

Optional

KIM Workshop. "Breaking Models: Data Governance and New Metrics of Knowledge in the Time of the Pandemic" MPIWG. <https://kim.hfg-karlsruhe.de/events/breaking-models/>

09/30 **NO CLASS**

10/07

INTELLIGENCE, THINKING, SMARTNESS

Halpern, Orit, Robert Mitchell, and Bernard Dionysius Geoghegan. "The smartness mandate: Notes toward a critique." *Grey Room* 68 (2017): 106-129.

Parisi, Luciana. "Automated thinking and the limits of reason." *Cultural Studies? Critical Methodologies* 16, no. 5 (2016): 471-481.

Mackenzie, Adrian. "The production of prediction: What does machine learning want?." *European Journal of Cultural Studies* 18, no. 4-5 (2015): 429-445.

Supplemental

Halpern, Orit. "Planetary Intelligence." In *The Cultural Life of Machine Learning*, pp. 227-256. Palgrave Macmillan, Cham, 2021.

Parisi, Luciana. "Critical computation: Digital automata and general artificial thinking." *Theory, Culture & Society* 36, no. 2 (2019): 89-121.

Geoghegan, Bernard Dionysius. "Orientalism and Informatics: Alterity from the Chess-Playing Turk to Amazon's Mechanical Turk." *Ex-position* 43 (2020): 45.

10/14

OPACITY, EXPLAINABILITY, ADVERSITY

Burrell, Jenna. "How the machine 'thinks': Understanding opacity in machine learning algorithms." *Big Data & Society* 3, no. 1 (2016).

Lepage-Richer, Théo. "Adversariality in Machine Learning Systems: On Neural Networks and the Limits of Knowledge." In *The Cultural Life of Machine Learning*, pp. 197-225. Palgrave Macmillan, 2021.

Reigeluth, Tyler, and Michael Castelle. "What Kind of Learning Is Machine Learning?." In *The Cultural Life of Machine Learning*, pp. 79-115. Palgrave Macmillan, 2021.

Roberge, Jonathan, and Michael Castelle. "Toward an End-to-End Sociology of 21st-Century Machine Learning." In *The Cultural Life of Machine Learning*, pp. 1-29. Palgrave Macmillan, Cham, 2021.

Supplemental

Accenture Labs. "Understanding Machines: Explainable AI" (2018).

10/21 VISION, RECOGNITION, DETECTION

Crawford, K., and T. Paglen. "Excavating AI: the politics of images in machine learning training sets. The AI Now Institute, New York University." (2019). <https://www.excavating.ai/>.

Offert, Fabian, and Peter Bell. "Perceptual bias and technical metapictures: critical machine vision as a humanities challenge." *AI & SOCIETY* (2020): 1-12.

Stark, Luke. "Facial recognition is the plutonium of AI." *XRDS: Crossroads, The ACM Magazine for Students* 25, no. 3 (2019): 50-55.

Paglen, Trevor. "Invisible Images (Your Pictures Are Looking at You)." *New Inquiry*, December 8, 2016, <https://thenewinquiry.com/invisible-images-your-pictures-are-looking-at-you/>.

10/28 ART, AESTHETICS, CREATIVITY

Zylinska, Joanna. *AI art: machine visions and warped dreams*. Open Humanities Press, 2020. <http://www.openhumanitiespress.org/books/titles/ai-art/>

Zeilinger, Martin. "Generative adversarial copy machines." *Culture Machine* 20 (2021): 1-23.

Ulrich, Obrist Hans. "Making the Invisible Visible: Art Meets AI." *New Experiments in Art and Technology*. Saas Fee Academy, 2018.

Supplemental

Hui, Yuk. "Art and Automation" in Hui, Yuk. *Art and Cosmotechnics*. U of Minnesota Press, 2021.

Zeilinger, Martin. "Tactical Entanglements: AI Art, Creative Agency, and the Limits of Intellectual Property." Meson Press, 2021.

Manovich, Lev. *AI aesthetics*. Moscow: Strelka Press, 2018.

11/04 BIAS, DISCRIMINATION, ETHICS

West, Sarah Myers, Meredith Whittaker, and Kate Crawford. "Discriminating systems." *AI Now* (2019).

Stark, Luke, Daniel Greene, and Anna Lauren Hoffmann. "Critical Perspectives on Governance Mechanisms for AI/ML Systems." In *The Cultural Life of Machine Learning*, pp. 257-280. Palgrave Macmillan, Cham, 2021.

Metcalf, Jacob, and Emanuel Moss. "Owning ethics: Corporate logics, silicon valley, and the institutionalization of ethics." *Social Research: An International Quarterly* 86, no. 2 (2019): 449-476.

Supplemental:

Barocas, Solon, Moritz Hardt, and Arvind Narayanan. "Fairness in machine learning." *Nips tutorial* 1 (2017): 2017.

"The Ethical Machine" Shorenstein Center on Media, Politics, and Public Policy.
<https://ai.shorensteincenter.org/>

11/11 **NO CLASS**

11/18 **ARTIFICIAL WHITENESS**

Katz, Yarden. *Artificial Whiteness: Politics and Ideology in Artificial Intelligence*.
Columbia University Press, 2020.

11/25 **NO CLASS**

12/02 **CLOUD ETHICS**

Amoore, Louise. *Cloud Ethics: Algorithms and the Attributes of Ourselves and Others*.
Duke University Press, 2020.

ASSESSMENT

Engagement: 10%

Presentations: 20%

Weekly Reflections: 30%

Final Project: 40%

ENGAGEMENT

I expect you to attend and actively engage in class. You will notice that you are being graded not simply on your attendance, but on your engagement with the class. Engagement can mean any number of things, from asking questions in class to engaging course material both in and out of class. I recognize that different students have different learning styles, and may find it challenging to speak up every day in discussion. The important thing is that you find ways to make your engagement legible to me as best you can. If you think you are struggling with this, please meet with me during office hours to discuss.

PRESENTATIONS

Twice over the course of the semester, you will be responsible for leading discussion on the class readings for that day. Each class period I will begin with a 20-30 minute lecture/presentation on the broader framework of the reading we have done, its disciplinary home and historical context. Your responsibility will be to stick closely to the text, draw out its arguments and conflicts, and lead the class through key concepts that we might derive from the work. You are encouraged to produce handouts or supply media objects to help us think through and apply the readings to our own work.

WEEKLY REFLECTIONS

(adapted from Lilly Irani)

Each week, I ask you to spend time reflecting and synthesizing the readings for the week. I offer two modes for doing this:

1. **Precis:** a summary, reflection, and critical inquiry into the readings. The précis is a place where you can explicitly draw connections and contrasts between issues that animate your scholarship and the week's readings. You should focus on generous engagement, linking the readings to our discussions or to projects you are interested in. Obey the spirit, not the rule, so other reflective forms like field notes are fine.
2. **Proposition:** low-stakes sketches of one or two forms of materialized intervention -- including but not limited to design interventions, tactical media, or media production -- motivated by the insights, problematics, or critiques of the readings. Devote a paragraph (or more if you need) explaining the link between course materials and the sketches.

Each week, bring your reflection on paper to the class. Make sure any text is at least 14-16 point font for easy reading for a distance. We will tape them to the wall and read them together standing up to kick off the class.

The reflection must be posted to the wall within the first five (5) minutes of class. Since we start the class with everyone's contributions, please be on time. You may miss one week without penalty, and do not need to write a reflection for the weeks you present.

FINAL PROJECT

(adapted from Lucy Bernholz)

Your final project is due on December 16 and can take one of two forms:

1. Design Intervention. Identify a problem, discuss relevant literature, and prototype an alternative.
2. In-Depth Case Study. Identify an example of politics in/as technology; situate within literature and debates; explain what circumscribes, challenges, or constricts its boundaries, and who participates; offer a theoretical claim on the nature of its political configuration.

Design interventions will be shorter than case studies, but will be supplemented by a functional prototype. Case studies will take the shape of a formal paper of 12-15 pages. We will host lightning talks on the final day of class where you will rehearse your argument and receive preliminary feedback.

POLICY ON INCOMPLETES

I may offer extensions on writing assignments only if you provide me with at least three days' notice and sufficient evidence that you are working on an idea that requires more time. This does not guarantee an extension, but rather is the base requirement for a request. Do not ask for an extension the day before an assignment is due, or if you have not started writing yet. Late assignments will be docked 1/3 a grade for each day they are late (B+ to a B, B to a B-, etc.).

ACADEMIC INTEGRITY

Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Any suspected instance of academic dishonesty will be reported to the Academic Judiciary. For more comprehensive information on academic integrity, including categories of academic dishonesty, please refer to the academic integrity page at the Center for Student Conduct's website at: <http://sa.berkeley.edu/conduct/integrity>.

DISABILITY SUPPORT SERVICES

If you have a documented physical, psychological, medical or learning disability that may impact your course work, please contact the Berkeley Disabled Students Program, 260 César E. Chávez Student Center, #4250, (510) 643-0518. They will determine with you what accommodations, if any, are necessary and appropriate. All information and documentation is confidential.