Logistics: Project

- Project presentation (next week in lectures)
  - Everyone is expected to attend both lectures
  - 10 minutes for presentation + 1~2 minutes for QA and transition

Dec 7	Charles, Riwen, Dhruva
	Yangchen, Helen, Tee
	Vishesh, Jake, Isabelle, Robert
	Max, Nurzhan, Bradley, Sam
	Aditya, Connor, Calvin
	Pratyay, Katherine, Julia
Dec 9	Bill, Chengcheng, Becky, Dian
	Ethan W., Alexander, Henry, Ryan L.
	Tushar, Ethan A., Alex E.
	Ryan M., Daniel, Ivan, Jennifer
	Will, Tatsuro, Saumik
	Xiaohan (Rocky), Ziyan (Jenny), Nicholas, Alex S.

Logistics: Project

- Project reports
  - Due: Dec 12 (no late submissions)
  - Up to 6 pages (plus unlimited number of pages for only references/citations)
  - No strict format requirements
    - You are encouraged to use standard templates, such as AAAI format or NeurIPS format
  - For research projects
    - Your report should be structured in a way similar to the research papers we have read throughout the semester. (e.g., include introduction, related work, research problem or formulation, your proposed approach, results, conclusions).
  - For literature surveys
    - Do not summarize papers one by one.
      Find a theme, categorize papers, and put them in context.
    - Example: Making Better Use of the Crowd: How Crowdsourcing Can Advance Machine Learning Research. Vaughan. JMLR 2018.

Assignment 4

- Final due today if you still have two late days left

- Check the list of talks on Piazza

Peer Review

- Please submit the peer review by 6pm

Reminder on The Grades (Copied from Lecture 1)

- Condition on you complete all other requirements satisfactorily, your final grades are determined by your final project
  - A+: Your project is close to be published in top venues
  - A: I'm happy to use your project as model projects in the future
  - A-: Overall good but might be better (in reports/presentation/approaches/…)
  - B+ or lower: There are more significant flaws in the project (e.g., not well-motivated problems, major issues in result interpretation/explanation, etc)

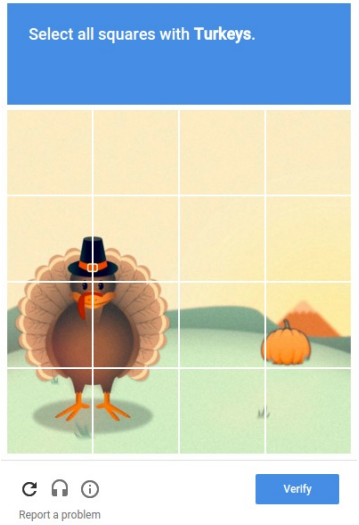
- Your final grades will be decreased from the above for missing reviews / homework issues / non-participation using the grading break-up in the syllabus
  - Follow the standard mapping (>93%: A, 90-93%: A-, …)

Lecture 24
Course Wrap-up

Instructor: Chien-Ju (CJ) Ho

Human-in-the-Loop Computation

- Study the design and analysis of human-in-the-loop computation.



Human as data sources: Label aggregation
Probabilistic reasoning to aggregate noisy human data

Practical challenges: Complex tasks and teams
Studies on workflow and team designs from HCI perspective

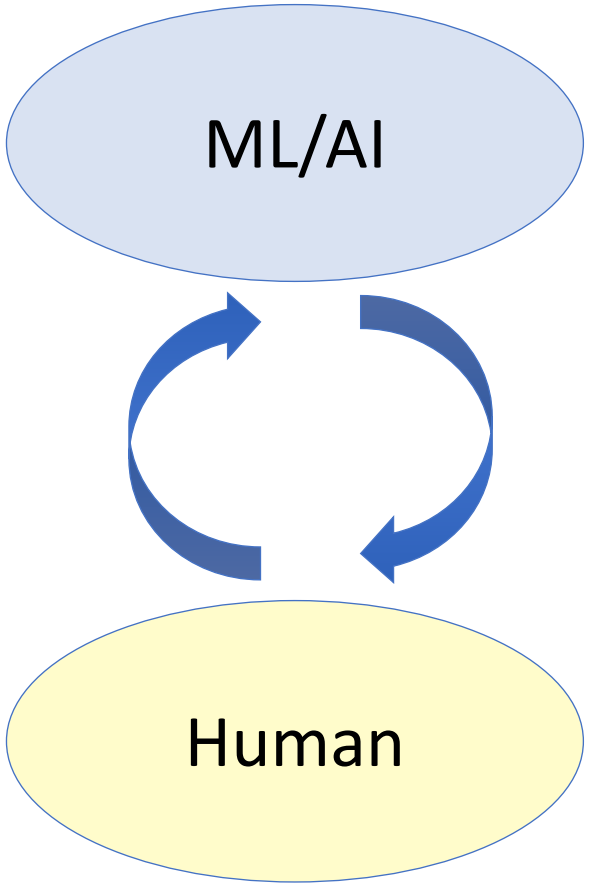
Humans are "Humans": Incentive design
Game theoretical modeling of humans and incentive design

Selected recent topics:
Ethical issues of AI/ML, learning with strategic behavior, Human-AI collaborations.

- ~~Will cover~~ Covered research papers from a wide spectrum of research fields, including machine learning, economics
- Explore more? Google scholar, conferences on where the papers you read are from

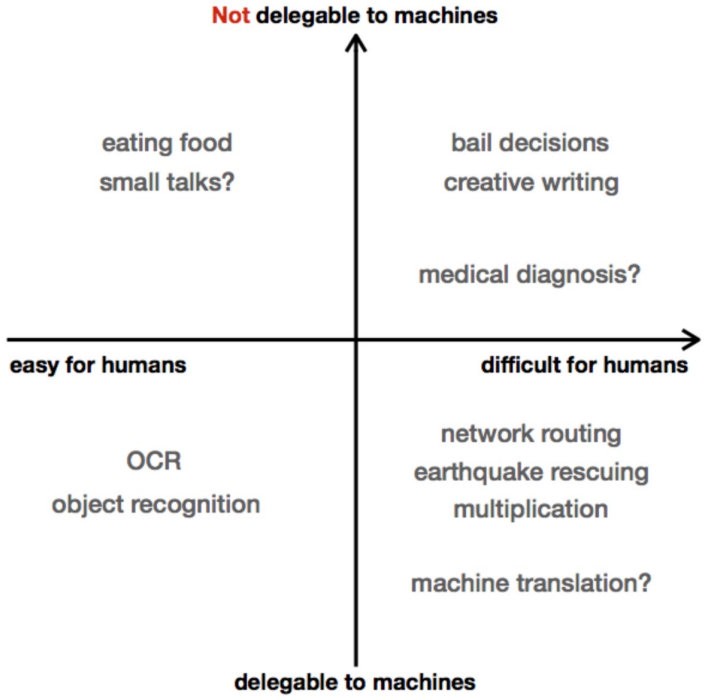
Interactions between Human and AI

- How AI learns from humans
  - Label aggregation
  - Incentive design
  - Biases input
- How AI impacts humans
  - Fairness
  - Transparency
  - Strategic manipulation

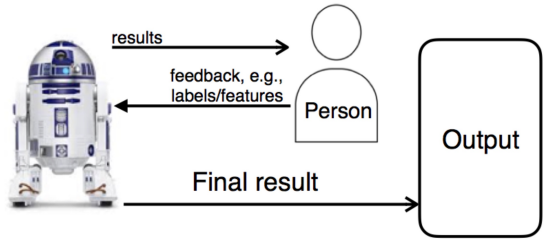


Human-AI Collaboration

- What can AI do => What should AI do

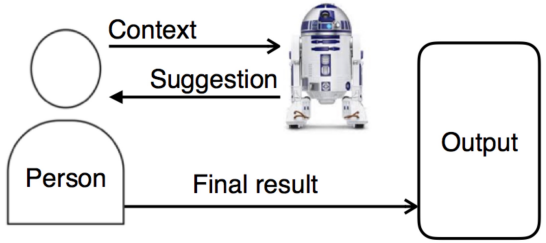


- Human-in-the-Loop



Model human behavior in computation
Design AI/ML that account for human behavior

- Machine-in-the-Loop



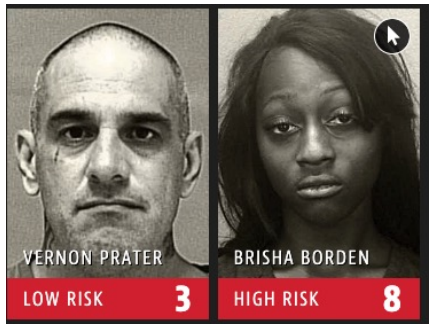
Model how humans model AI
Design AI/ML that account for humans' mental models

Opportunities and Challenges For AI/ML + Humans/Society

- AI amplifies/augments human abilities
- It also amplifies and create challenges

RESEARCH-ARTICLE

Towards fairer datasets: filtering and balancing the distribution of the people subtree in the ImageNet hierarchy



Opportunities and Challenges For AI/ML + Humans/Society

- AI amplifies/augments human abilities
- It also amplifies and create challenges

- Human-centered approach is an ideal
  - Which groups of “humans” are we referring to
  - Humans might not be able to solve these concerns

Human-Centered Machine Learning

- The idea is nice => AI is augmenting humans instead of replacing humans
- AI might also be able to manipulate humans to make decisions
  - Think about recommendation letter writing in Assignment 3
- Let's just ask AI to present all information
  - Exceed the human cognitive load
- Who to decide what AI should do?

Opportunities and Challenges For AI/ML + Humans/Society

- WashU Division of Computational and Data Sciences
  - A PhD program hosted by CSE, Political Science, Social Work, Psychology and Brain Science

- MIT Institute for Data, Systems, and Society
- CMU Societal Computing
- Stanford Institute for Human-Centered Artificial Intelligence
- USC Center for AI in Society
- Harvard Center for Research on Computation and Society

- ACM FAccT* (Fairness, Accountability, and Transparency)
- AAAI / ACM Conference on AI, Ethics, and Society