ARTIFICIAL INTELLIGENCE

// CLASS 11

FALL 2015 / SECTION 02 / HOLLY BUCK

TODAY'S CLASS…

- #RJ7: nice work!

- Mini-lecture: social & ethical context of Ais

- Discussion: what aspect of AI are you most concerned with?

- Ethical Analysis 1 due 10/3, 9pm

- Team Survey & Class Progress Survey: due Monday along with RJ8

DECADES OF ANTICIPATION…

- 1958: the Perceptron, an early AI machine developed at Cornell University with military money, reported in the New York Times as "the embryo of an electronic computer that [the American Navy] expects will be able to walk, talk, see, write, reproduce itself and be conscious of its existence."

- "Singularity" – coined by John von Neumann in 1950s; technological event that would irrevocably change human affairs. Vernor Vinge: convergence of AI & biological enhancement would trigger singularity. Common meaning today: that we can transcend biological death through AI & IT (John Miller)

- Boom & bust cycles

- Machine learning becomes distinct subfield (or discipline) from AI in 1990s, more or less – focuses on specific problems

- https://class.coursera.org/machlearning-001/lecture/249

SCHOOLS OF THOUGHT WITHIN MACHINE LEARNING

1. Symbolists – view learning as the inverse of deduction; draw from philosophy, psychology, logic (inverse deduction)
2. Connectionists – reverse engineer the brain; draw from neuroscience and physics (backpropagation)
3. Evolutionaries – simulate evolution on the computer, draw from genetics & evolutionary biology (genetic programming)
4. Bayesians – learning as form of probabilistic inference, draw from statistics (Bayesian inference)
5. Analogizers – learn by extrapolating from similarity judgments, draw from psychology and mathematical optimization (support vector machine)

(- Pedro Domingos)

Different schools of thought / origins = different social & ethical outcomes?

THE "GRIN" TECHNOLOGIES & CONVERGENCE

- Early 2000s
  - Dotcom bubble
  - Biotech enthusiasm
- What happened to nano?
- Convergence of these technologies
- People got used to the idea of them – plus they didn't develop super-rapidly
- But, actual investment boom in both genetics & AI right now
  - Big Tech buying AI startups, e.g. Google pays $400 million for DeepMind
  - Goldman Sachs: "on the cusp of a period of more rapid growth in [AI] use and applications."
    - Cheaper sensors
    - Increase in tech that can understand unstructured data, like conversations and pictures

- Shared concern: self-replication

MACRO-SCALE SOCIAL & ETHICAL ISSUES

- Superintelligence: we create AIs who go on to create even smarter AIs (maybe they decide they don't need us)

- Ethical concerns about how humans design and treat AIs (servants? slaves? Is it ethical to build a brain and turn it off?)

- Concerns about the moral behavior of AIs: how do we teach them morality?

  - Are we creating machines who can make decisions like humans, but without moral systems?

  - Victor: "If human beings can't agree on a single ethical structure, how would it be possible for people to build machines that "can understand the structure of ethics"?"

MORAL STATUS

"Sentience: the capacity for phenomenal experience or qualia, such as the capacity to feel pain and suffer

Sapience: a set of capacities associated with higher intelligence, such as self-awareness and being a reason-responsive agent

While it is fairly consensual that present-day AI systems lack moral status, it is unclear exactly what attributes ground moral status.

Two criteria are commonly proposed as being importantly linked to moral status, either separately or in combination: sentience and sapience (or personhood)."

- Bostrom

BEYOND SKYNET OR THE SINGULARITY…

"…an exclusive focus on AI and robotics in terms of "end of the world" and other doom scenarios (or, in Bostrom's case, utopia) is that they tend to distract from very real and far more urgent ethical and social issues raised by new technological developments in these areas."

- For example, is there still a place for privacy in the ICT world we are creating?
- Does work become increasingly stressful due to information overload and the increasing speed of communication?
- Do large and powerful corporations such as Google, Facebook, Apple, and so threaten democratic governance of technology?
- Are new financial technologies a danger for the world economy?"

 - Mark Coeckelbergh, prof. of Technology & Social Responsibility

HOPES & FEARS

Take a minute to jot down a hope or a fear you have regarding AI.
Go around in a circle in your group to share – hear from everyone.

In your group, collectively decide on one hope or fear that you think is crucial to discuss. Write it down in question form. You can have up to three sub-questions.

Pass your sheet to another group. Discuss.