Next Classes and Conclusion

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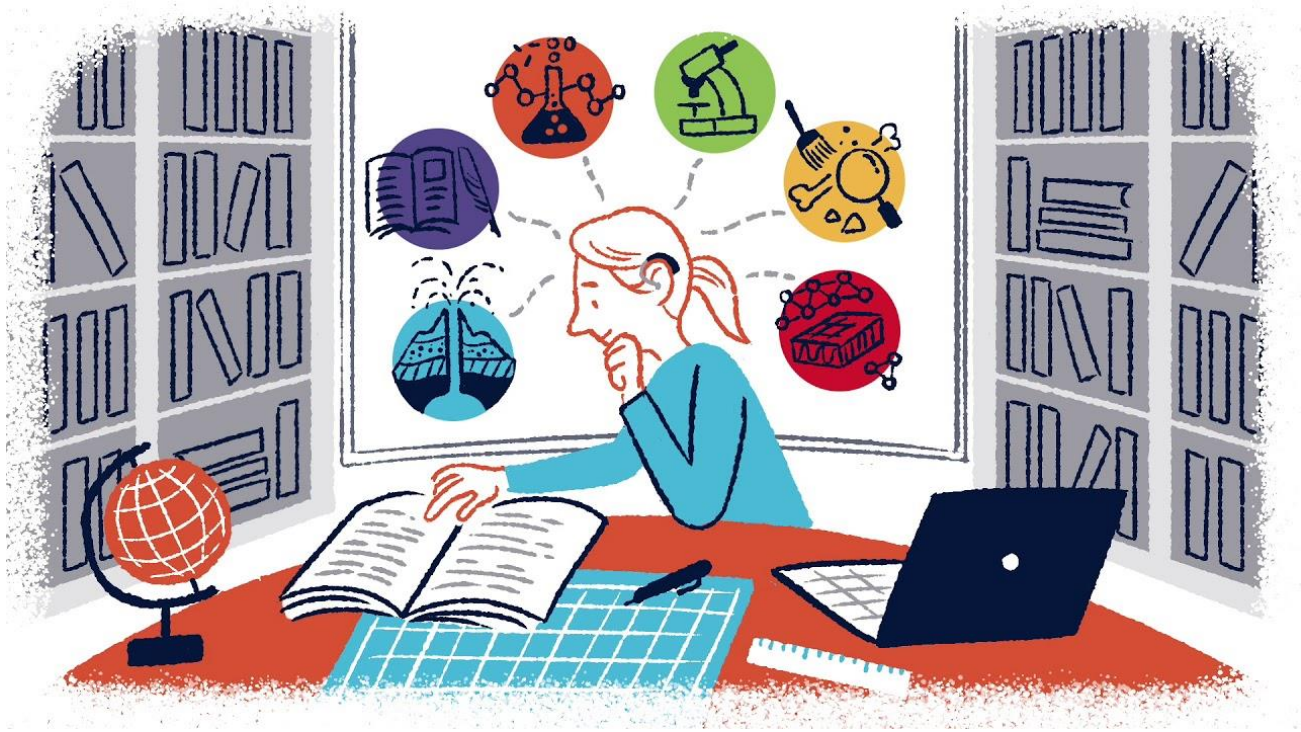
Announcements/Reminders

- HW4 due today at 11:59pm
- Section tomorrow: Final review
- Final exam Thursday December 7, 2-4pm
  - Please use pen! (For scanning/grading purposes)
  - Do not write on the back of the exam, we added overflow space at the end (backs are OK for ungraded scratch work)
- Office hours next week: Check the calendar. Some TA's/CP's are available, others are not
- Final project due December 12

Next classes to take next semester

- Natural Language Processing
- Robotics
- Theory of Machine Learning
- Other topics (Multi-agent systems, compbio)
- Beyond next semester



Natural Language Processing

- **CSCI 499: Language Models in NLP (Swabha Swayamdipta)**
  - Class on modern NLP, focusing on language models
- **CSCI 544: Applied NLP (Xuezhe Ma)**
  - Generally a more “traditional” NLP class, will talk a bit more about classic NLP tasks (sequence tagging, machine translation, dialogue systems) as well as modern approaches
- **CSCI 644: Natural Language Dialogue Systems (Kalliroi Georgila, David Traum)**
  - Focused class on dialogue systems (e.g., Siri, Alexa)
  - Another place in NLP where reinforcement learning can be used—dialogue systems also “take actions” by interacting with various apps/APIs

Robotics

- (Not exactly ML topics but highly related)
- **CSCI 445L: Introduction to Robotics (Erdem Biyik)**
  - Hands-on introduction to robotics, will work with real physical robots
- **CSCI 545: Robotics (Daniel Seita)**
  - More advanced course covering control theory, kinematics, dynamics, sensor processing
  - Seems to get more into the math, which involves a lot of linear algebra

Math & Machine Learning

- **Math 447: Mathematics of Machine Learning**
  - Math-focused class on machine learning
  - How to prove that a model will achieve good test accuracy?
  - What types of problems are theoretically learnable?
  - When can we prove that gradient descent will converge?
- **ISE 633: Large Scale Optimization and Machine Learning**
  - Our class: Always use (stochastic) gradient descent
  - How fast does gradient descent converge?
  - What are improvements to gradient descent/other optimization methods?
  - How can we solve constrained optimization problems?

Multi-Agent systems

- **CSCI 499: Foundations of Multi-Agent Systems (Sven Koenig)**
  - In class: Reinforcement learning involves 1 agent interacting with an environment
  - Often times, there are many agents interacting simultaneously with an environment + each other (e.g., multiple robots)
  - Agents have to learn, communicate, reason about other agents (game theory), etc.

Healthcare/Computational Biology

- **CSCI 699: Machine Learning in Healthcare and Biomedicine (Ruishan Liu)**
  - New class!
  - In general, 699's are aimed at PhD students but advanced undergraduates with appropriate background (e.g., this class) can also ask the instructor to enroll

Classes that may be offered later…

- **CSCI 461: AI for Sustainable Development**
  - Project-based class focusing on AI for social good (e.g., sustainability, poverty, homelessness, health)
  - Includes discussions of research papers
- **CSCI 677: Advanced Computer Vision**
  - Deep learning for computer vision
  - Standard tasks (object detection, semantic segmentation, motion analysis, activity recognition, visual question answering)

That's it!

- Thank you for a wonderful semester!