Welcome to

Beyond Worst-Case Analysis!

About me

Ellen Vitercik
Assistant Professor at Stanford
Management Science & Engineering
Computer Science

Research revolves around

- Machine learning
- Algorithm design
- Discrete/combinatorial optimization
- Interface between economics and computation

About me

Grew up in Lincoln, Vermont

BA: Columbia
Math

PhD: Carnegie Mellon
Computer Science

Postdoc: UC Berkeley

Course assistant

Ishani Karmarkar
PhD student in ICME

Course overview

Website: vitercik.github.io/bwca

On the website, you can find syllabus information like:

- Office hours
- Project policy
- Homework late policy
- Schedule of topics with supplementary readings

Prerequisites

Introductory course in **algorithms/optimization** (e.g., CS 161)

Class breakdown

60% Homework assignments (4 total)

40% Project

Policies

60% Homework assignments (4 total)

- Total of 4 late days for assignments, e.g.:
  - No penalty if you submit 1 assignment 4 days late
  - Or 2 assignments 2 days late, …
- Beyond that, grade goes down by 7 points for every 12 hours it's late
  - E.g., 90% to 83%
  - Lasts until week after deadline, at which point assignment will receive grade 0%
- **Ask questions on Ed Discussion** (linked to on Canvas)
  - Fastest way to reach course staff

Policies

Policies intended to cover all

- Sicknesses
- Family events
- Sports events
- …

Use your late days carefully!

Please *come talk to me if you're struggling!*

Policies

40% Project

- Write a “mini-paper” as a final project
- Can take one of two forms:
  - Research
  - Survey

Option 1: Research project

Present progress your group made on a relevant problem

Report should adopt the structure of a research paper

(Not required to reach the standard for academic publishing)

Option 2: Survey project

Choose **2-4 papers** discussed in class. For each paper:

1. Summarize a paper that **the paper covered in class cites**
   How does the paper covered in class build on the older paper?
2. Summarize a paper that **cites the paper covered in class**
   How does the more recent paper build on the paper covered in class?
3. Imagine you're a **new researcher** working in this area
   - Propose an imaginary follow-up project
   - Not just based on the paper covered in class…
     but **only possible** due to the existence and success of that paper

Working in groups

- Welcome to work in groups on the final project
- Groups should include:
  - At most three students if it's a **research** project
  - At most two students if it's a **survey** project
- Group of two must put twice as much work into project
  - Similarly for groups of three
- The **paper length** for final write-up is:
  - 3 if solo-authored,
  - 5 if there are two authors, and
  - 7 if there are three authors

Milestones

May 1: Submit a short progress report of 1-2 pages

Describe your project and partial progress

June 3: Students will present their final project during class

June 11: Each group will submit their final report

Class format

Blackboard!

- Studies show that students learn better from blackboard vs. slides
- Writing down notes helps you learn
  - As opposed to just following along in slides
- I automatically go slower

Please ask questions in class!

2-minute anonymous surveys

- Watch out for an email about a 2-min anonymous survey
- Random set of students asked each week
  - You'll be asked 2-3 times during the quarter to fill it out
- It's so useful for us!

Please use it to tell us:

- What's going well 😀
- What you're confused about 🤔
- How we can best help you learn!

OAE

Let me know if you have an OAE letter as soon as possible

Thanks!

I’m looking forward to getting to know you this quarter!