Fall 2026 Recitation 1: Data, AI, and Society

"The Prisoners' Dilemma"

Summary

In this week's activity, we will be playing the prisoner's dilemma (PD) game! We'll play two versions of the game as individuals, and then do a group competition. On Monday in lecture (time permitting), we'll collaborate to come up with an *algorithm* that we'll use to compete in a computational tournament, similar to the real computational tournaments run in the past, or the one you can play here. The catch here is that we don't quite have time to do it for real, so we're going to simulate it with people 🙂.

Learning Goals

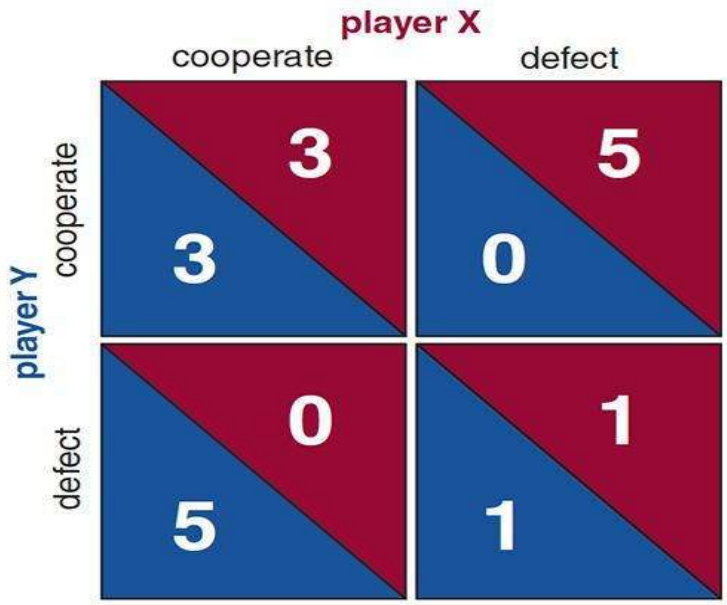
1. Learn how the PD game can help you think about human behavior
2. Effectively communicate pseudocode so that someone else can read it
3. Think strategically about how to advance in a competitive environment where you need to establish trust

What You'll Submit

A group PDF on UBLearns and your individual Weekly Reflections

Part 0: Setup (5 minutes)

1. Get in your groups!
2. Your TAs will go over the Weekly Reflection ... reflections.
3. Create a shared Google **Doc**. At the beginning of the document, include your section name, team name/number, and team members' names.
4. Your instructors will remind you how to interpret the payoff matrix below:



Part 1: More Setup (4 minutes)

Everyone needs **a sheet of paper and a pen/pencil**. Get these things, and then make a table on your sheet of paper that looks like this:

Round	**Your Score**	**Your decision (C or D)**
1		
2		
3		
4		
5		
6		
7		
8		
Total		

Part 2: Individual Gameplay, No Talking (12 minutes)

1) Your instructors will demonstrate. As a reminder, (the traditional version of) PD is a two-player game. Player X (you) and Player Y (someone else) stand in front of each other, and each decides whether to cooperate or defect. You then receive a **payoff** based on the decision you and the other person make. The payoff matrix we'll use today is shown to the right. In this matrix, for example, if you decide to defect, and your partner decides to cooperate, you get 5 points, and they get 0. Hah! Stinks for them, huh?
2) As directed by the instructors, you will **stand up**, and **go find a first person from another group! No talking!**
3) When the instructor says **Complete Round 1**, you will count to three and then choose to **cooperate OR defect on each round**. You do you! **On each round, if you want to defect, present a fist (a "rock" in rock, paper, scissors). If you want to cooperate, make a V with your fingers (a "scissors").** This is a **competition.** Get your game face on. No talking!
4) After each round, write down your score on your sheet of paper, as well as the decision you made
5) You can now **keep interacting with a partner for up to three rounds**. Or, e.g. if someone defects on you, you can leave after one round! However, **if someone approaches you, you must stop interacting with your current partner**. Then you must move randomly to find a new partner; you cannot seek out certain individuals!
6) We'll go for 8 rounds, so you must have at a minimum 3 different partners.
7) Once you're done, return to your seats. The instructors will identify the person who won the most points, and will let Kenny know who won. In lecture next week, recitation winners will (subtly!) receive a prize (don't get too excited, here, team.)

Part 2: Group Competition, with Interaction (20 minutes)

Now, we will return to our groups for some good old **team competition**. The competition will be set up such that each team "plays" each other team 5 times (formally, a "One-Shot Tournament"). Before the tournament begins, you will need to do the following:

1) Your team should come up with an **algorithm** that you will use during competition. Your algorithm *must* have at least one dependency on the *other team's behavior*. For example, your algorithm might be (this is a bad strategy, by the way...) "if in the previous two turns this team collaborated, then we'll defect, otherwise, we will collaborate." You can write it in words, or pseudocode.
2) **Name your algorithm**, and *write it down* (you will need to submit it).
3) You will now **hand your written down algorithm to the TAs**. The TAs and the instructor will then interpret your algorithm on their own in a competition, where each group will "play" one other group (e.g. 1 vs 2, 3 vs 4, etc.). Your TA will do their best to interpret your algorithm, but it is up to you to be clear about what is to be done in each situation! **You should keep track of your score as the instructors "play"!**
4) While the other teams are playing, your instructors will give you a chance to revise your algorithm, if you so choose. **If you decide to do this, keep track of both algorithms!**
5) You'll then play a second round against another group (e.g. 2 vs 3, 4 vs 5, 6 vs 1, etc). If your group ends up playing more than two rounds, just keep track of your score for the first two! Your score will then be added up and you can either a) celebrate if you are the winner or b) eternally despair if you are not.

Part 3: Writing your Group Response (8 minutes)

Answer the following questions for your group submission:

1) For Part 2:

a) Each team member should describe their general strategy here (1-2 sentences is fine).
b) Which of your team members did the best, and why?

For Part 3:

c) Provide your team's initial algorithm
d) Were your instructors able to follow your algorithm as you intended it to be used? Why or why not (do you think)?
e) Did your team change your strategy halfway through? Why or why not?
f) Did you win? Why do you think your team did or didn't do well?
g) Name one additional piece of information your team might have used that would have improved the performance of your algorithm.

Part 4: Group Submission and Individual Weekly Reflection (5-7 minutes)

At this point, you should wrap up your efforts! For full credit today, please ensure the following:

- One person in your group has submitted the group assignment for this week to UBLearns
- All group members have filled out the weekly reflection for this week, available in UBLearns

Grading

The syllabus details points allotted to students who are late or absent. Otherwise, below are details on how your group submission:

- 0 Points – Did not participate or complete the required activity/group work.
- 1 Point – Limited participation or contribution to the activity/group work.
- 2 Points – Partially or incorrectly completed the activity/group work successfully and contributed meaningfully.

- 3 Points – Fully and correctly completed the activity/group work and demonstrated strong individual participation and understanding.

Source Information: Much of this activity is adapted from here