CPS485 - 2026 Spring - Assignment #1

DUE DATE: No later than Feb. 17 (Tue.), 2026, 11:59 PM EST.

REQUIREMENTS

- Each group will hand in only **one submission**.
- **Print names of all members** are required in submissions.
- **All code is required to be runnable**.
- **All conclusions need to be rigorously defended.**
- All source code and document for each submission are required to be packed in a **ZIP file**. The name of this ZIP file is suggested to follow the format:
  `CPS485_2026_Spring_[HW NUMBER]_[MEMBER NAMES].zip` .
- All submissions will be sent to Fanchao (fmeng@misericordia.edu) via **emails** or using GitHub repos. Fanchao will confirm each submission. No printed submissions.
- **Late submissions are NOT accepted** unless you have the permission from Fanchao.

Problems (100 points in total)

1. (100 pts) Create an agent that plays tic-tac-toe using search-based methods with heuristics. You are required to create THREE different levels of intelligence.
   - Level 1
     - Naive
     - Follow game rules
   - Level 2
     - Smarter than Level 1
     - Humans can win it with great probabilities
   - Level 3
     - As smart as humans in this game, i.e., the best results for humans are tie.

   Requirements:
   - (a) Code is required.
   - (b) You must explain what heuristics are used for each level, and why they work.

- (c) You must show the intelligence levels with concrete experimental results: Human = Level 3 > Level 2 > Level 1