

# Yancheng Zhu

zhu436@wisc.edu — GitHub — Website

## EDUCATION

---

**University of Wisconsin-Madison**

Sep 2021 - Dec 2024

**Bachelor of Science**

GPA: 3.97/4.00

Majors: Computer Science, Math

Relevant courses: Machine Learning, [Algorithmic Game Theory & Mechanism Design](#), Linear Optimization, Integer Optimization, Probability Theory, Algorithms, Operating System, Database Management System

## RESEARCH EXPERIENCE

---

**MARL for Autonomous Cars**

Sep 2024 - Present

*Undergraduate Researcher*

Mentor: [Dr. Young Wu](#)

- Investigate classic MARL designs, including DQN, policy gradient and its variants.
- Implemented a solver for a two-player zero-sum Markov game using linear programming.

**Game-theoretic Analysis of Polarized Information**

Dec 2023 - Present

*Undergraduate Researcher*

Mentor: [Prof. Jerry Zhu](#), [Prof. Kirthevasan Kandasamy](#), [Dr. Young Wu](#)

- Research methods to design a monetary-free mechanism aimed at promoting unbiased reporting by social media agents using game theory principles.
- Developed and proved a potential function, demonstrating one of the systems operates as a potential game, enhancing the understanding of agents' behaviors and game equilibria. Co-authoring a paper summarizing these results.
- Implemented best-response dynamics in Python to analyze the evolution of game dynamics, enabling the validation of proposed mechanisms and exploration of novel configurations.

**WISCERS Program**

Feb 2023 - May 2023

*Undergraduate Researcher*

Mentor: [Prof. Jerry Zhu](#)

- Reviewed the concept of machine teaching and implemented several greedy machine teaching algorithms used for regression and clustering in Python.
- Analyzed the limitations in terms of time complexity of these greedy implementations.
- Examined literature that proved machine teaching to be NP-hard.

## PROJECTS

---

**Log-structured File System**

Sep 2023 - Dec 2023

- Studied the designing principals of file systems.
- Implemented a log-structured FUSE with basic functionalities such as getattr, mknod, mkdir, read, write, and readdir in C.

**Directed Reading Program**

Sep 2023 - Dec 2023

- Applied ULMFiT with [fast.ai](#) libraries to build models used for text classification.
- Presented basics of NLP, challenges of training a model, and the training result to undergraduate audience.

## TEACHING EXPERIENCE

---

**Intro to AI (CS 540)**

Sep 2024 - Present

*Undergraduate TA*

- Conduct office hours to help students understand class concepts and debug coding assignments.

**Math Learning Center of UW-Madison**

Sep 2022 - Present

*Math Tutor*

- Answer students' questions about calculus, linear algebra, and probability; solve problems in students' homework and exams.
- Instructed first-year athletes on fundamental algebra concepts.

## PROFESSIONAL SKILLS

---

Java, Python, C/C++, Gurobi, SQL, Pytorch