Curriculum Vitae (Last Update: Jun. 2024)
Xin (Donald) Lin

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EDUCATION

University of Michigan   Ann Arbor, MI
Ph.D in Computer Science & Engineering   *Aug 2024 –*
- Advisors: Jenna Wiens, Maggie Makar
- Research Interest: Machine Learning for Healthcare

Davidson College   Davidson, NC
Bachelor of Science in Computer Science & Mathematics   *Aug 2020 – May 2024*
- GPA: 3.929/4.000 | Magna Cum Laude
- Advisors: Raghuram Ramanujan, Yan Zhuang

RESEARCH EXPERIENCE

Machine INtelligence Lab, Davidson College   May 2023 – Current
Research Assistant, supervised by Professor R. Ramanujan   *Davidson, NC*
- Initiated an in-depth comparative analysis of AI chess agents using **adversarial search** techniques, focusing on minimax search and Monte Carlo tree search
- Designed and executed $100,000+$ simulations on high-entropy and unconventional chess positions to evaluate AI **decision-making** capabilities and vulnerabilities
- Highlighted the versatility of **Deep Neural Networks** beyond the training phases, prompting further investigation into innovative AI search methods
- Engineered a novel agent integrating **minimax search** and neural networks, exploring the synergy between heuristic algorithms and neural networks (theme of my **senior thesis** in progress)

Facility for Rare Isotope Beams (FRIB), Michigan State University   May 2022 – Sept 2022
Research Assistant, supervised by Professor M. Kuchera, R. Ramanujan   *East Lansing, MI (Remote)*
- Created customized **Reinforcement Learning** (RL) environments to optimize tuning of hundreds of magnets in the particle accelerator
- Extended **OpenAI Gym** with **PyTorch** randomization to facilitate robust testing of RL environments
- Proved RL's potential to streamline the traditional process of extensive trial and error by achieving a solution within a 0.04% gap to optimal

SHORT TALKS AND POSTERS

1. Xin Lin. "Understanding the Success of Reinforcement Learning-based Chess Agents" *Davidson Math/CS Coffee (departmental colloquium series)*, December 2023. Invited research presentation.

2. Xin Lin. "Exploring Weaknesses in AI-Powered Chess Agents." *Davidson Fall Research Symposium*, September 2023. Poster, Short Talk.

3. Xin Lin. "Linear Programming for Meal Optimization at Commons." *Davidson College Verna Miller Case Symposium (Mathematical Modeling class project)*, April 2023. Poster.

4. Xin Lin. "Reinforcement Learning for Tuning Magnets at FRIB." *Davidson Fall Research Symposium*, September 2022; *Sigma Pi Sigma Physics Congress*, October 2022. Poster, Short Talk.

TEACHING EXPERIENCE

Davidson College   *Davidson,NC*
- Grader & Tutor, PHY-125 General Physics I w/Calc (34 students)   Fall 2022
- Grader & Tutor, PHY-235 General Physics II w/Calc (27 students)   Spring 2023
- Grader, MAT-235 Differential Equations (28 students)   Fall 2023
- Math/CS general Tutor: Counseled 20+ students with coding (Python, Java) and other computational (Calculus, Linear Algebra, Discrete Structures) problems   Fall 2022 - Current
- Chinese Apprentice Teacher: Mentored 20+ students through 100+ instructional hours, facilitated advanced topic lectures, and advised students' independent research projects   Fall 2021 - Spring 2022

Grants and Awards

- Davidson College Alvarez Academic Grant   Fall 2023
- Davidson College Weinstein Grant   Fall 2023
- Davidson College R. Craig and Sheila Yoder Applied Research Fellowship   Spring 2023
- Honor Society: Sigma Pi Sigma (society for physics and astronomy)   Fall 2022

Technical Skills

- Proficiency in Python (NumPy, Pandas, Matplotlib, Seaborn, Scikit-learn), Java, MySQL/SQLite, C/C++
- Experience with Tensorflow, PyTorch, Assembly Language, HTML, R, Mathematica, Matlab, Racket

Related Experiences

Cats Stats Sports Analytics Group   Oct 2021 – Mar 2023
Data Analyst   *Davidson, NC*
- Analyzed game data (player shot locations, historical metrics) for Davidson Wildcats Women's D1 Basketball team
- Leveraged Python libraries to perform regression analyses and probabilistic modeling, creating heatmaps to visualize players' shooting accuracies at different spots
- Applied time-series analysis to forecast performance trends and patterns of starting players

Professional Service and Volunteering

- *Panelist*, Davidson College Math/CS Coffee (departmental colloquium series) (March 2024)
- *Coordinator*, Davidson College Math/CS Dept. Quiz Center (Fall 2023)
- *Panelist*, Research Opportunities at Liberal Arts Colleges (July 2022)
- *Volunteer*, Charlotte Community Health Clinic (Fall 2021, Spring 2022)