Alex L. Wang

Website GitHub

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Education

- **Stanford University** — Stanford, CA
  B.S. in Mathematics & Computer Science — *June 2026*
- Relevant Coursework: Deep Learning for Natural Language Processing, Linear Algebra and Matrix Theory, Machine Learning, Discrete Math, Computer Organization and Systems, Data Structure and Algorithms.

Experience

- **MITRE** — Bedford, MA
  Software Engineering Intern — *Jun. 2024 - Aug. 2024*
  - Intern in Distributed Systems department and Signal Processing Unit developing the Waveform Analysis Toolbox (WAT Box) in collaboration with sponsors, United States Special Operations Command and DOD CIO.
  - Developed an algorithmic modular code package in Python and C/C++ for calculation and visualization of the detection radius of modulated RF signals by applying LPD/LPI applying estimation theory.
  - Developed Flask-based full-stack application with SQLite database for data-visualization in mapping module.
- **Stanford Artificial Intelligence Laboratory (SAIL)** — Stanford, CA
  Research Assistant — *Jan. 2024 - June 2024*
  - Student researcher working under professor Ron Dror in building molecular dynamic simulations for discovering binding targets of Serotonin receptors.
  - Analyzing large-scale MD simulations, applying WESTPA2 methods and cell embeddings with transformer models for application to serotonin receptors to further understand the binding of psychedelic substances.
- **Air Force Research Laboratory (AFRL)** — Dayton, Ohio
  ML/AI Researcher — *June 2023 - Sep. 2023*
  - Used a statistical mechanical approach to simulated polymer physics, improving performance of Markov Chain Monte Carlo (MCMC) detection of phase transitions and desired polymers.
  - Utilized UMAP for feature extraction of MCMC data and Pytorch for polymer characteristic anomalies detection, increasing accuracy rate by 15%.
  - Wrote algorithms for polymer structure optimization in Python/Julia as a mechanism for discovering potential targets within high-dimensional polymer subspace.
- **Massachusetts Institute of Technology** — Boston, MA
  Engineering Research Intern — *June 2022 - Aug. 2022*
  - Student researcher under Professor Ariel Furst, conducting electrochemistry research for affordable diagnostics.
  - Used MATLAB for fluid-dynamics modeling of CRISPR-Cas12a on DNA-modified gold surfaces.
  - Designed & tested spatially multiplexed gold-leaf electrodes for tuberculosis detection with total construction costs under $3. Currently patent-pending with MIT Technology & Licensing Office.

Projects

- **Enhancing AI Creativity: A Multi-Agent Approach to Flash Fiction Generation with Small Open-Source Models**: Building multi-agentic LLM pipelines to improve creative output generation with open-source models.
- **Unmanned Autonomous Vehicles with NLP for Command Translation**: Currently building a Unmanned Aerial Vehicle (UAV) with companion-computer Nvidia Jetson Nano and Raspberry Pi Model 4B which relies on spoken-commands to translate to drone actions. OOP Method that uses Whisper to transcribe speech, generate plans, and create MavSDK code to execute the plan. Developing software-in-the-loop integration for simulation testing.

Awards

- **American Chemical Society**
  Top 20 Student (of 16,000) in the United States National Chemistry Olympiad, team Alpha Xi — *2021*
- **Stanford Association for Computing Machinery**
  Overall (Model and Paper) Winner of Computer Vision Project Competition. — *2023*

Programming Skills

- **Languages**: Python (Pytorch Frameworks), C/C++, Julia, MATLAB, JavaScript **Software**: CAD