Minglai Yang

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WORK EXPERIENCE

The University of Arizona, CLULAB   **Tucson, Arizona**
UGRA (Supervised by Dr. Mihai Surdeanu and Dr. Liangming Pan)   Oct 2024 – Present
- Collaborating with Dr. Mihai Surdeanu to prepare a publication targeting **ICML 2025**, focusing on novel speculative decoding strategies with dynamic copying.
- Working with Dr. Liangming Pan on Physics of Language Models targeting **EMNLP 2025**.

The University of Arizona, ML4AI LAB and IVILAB   **Tucson, Arizona**
UGRA (Supervised by Dr. Kobus Barnard and Dr. Adarsh Pyarelal)   Oct 2023 – Present
- Developing the application of dynamic Bayesian networks and Theory of Mind concepts within the ToMCAT project, enhancing AI's ability to interpret complex human behaviors and predict their coordination.
- Collaborating with Dr. Paulo Soares and Dr. Adarsh Pyarelal to develop a probabilistic model distinguishing genuine interpersonal coordination from spurious synchrony, targeting **NeurIPs 2025** publication.

The University of Arizona, AI Club   **Tucson, Arizona**
Vice President & Director of Research   Oct 2024 – Present
- Giving lectures about Math foundations for AI and Machine Learning (eg. Probabilistic Graphical Models).

The University of Arizona, AI Core   **Tucson, Arizona**
AI Engineer - Project Investigator   Mar 2024 – Dec 2024
- Built RAGHUB, a chatbot website in React using RAG to process and interact with user-uploaded documents, serving 400+ active users at our university.
- Presented AI agents in 3D-World environments, showcasing spatial understanding and capabilities.
- Developed a VR Chatbots for Meta glasses with AI face visualization, enhancing immersive interactions.

CoreTechs Consulting Inc.   **Kensington, Maryland**
Machine Learning Engineer Intern (Full Time)   May 2024 – Aug 2024 (on-site)
- Build GPT bots for Discord and Slack, employ GPTs and Pinecone in **Sagemaker** for RAG and integrate Slack into official websites through live chat in Javascript, increasing **57%** more active users than before.
- Orchestrate end-to-end website development, including design, deployment, and management on **AWS** with **Nginx**, **Docker**, and services like **EC2**, **RDS**, and **S3**.
- Simulated 500+ concurrent users with **Selenium** to rigorously stress test the web application's performance.

EDUCATION

University of Arizona, College of Science   **Tucson, Arizona**
Bachelor of Science in Computer Science and Mathematics   Expected Grad: Dec 2025
GPA: 4.0/4.0
Honors: Academic Year **Highest** Academic Distinction, Global Wildcat Tuition Award, Dean's List with Distinction

TECHNICAL SKILLS

Programming Languages: Python, Matlab, Java, Javascript, Swift, PHP, HTML, CSS, MySQL, Visual Basic, C
Tooling: Docker, Nginx, MAMP, AWS, GitLab, MongoDB, Pinecone, Node.js, React, Selenium, LangChain, WordPress, OpenCV, YOLOv10, NumPy, Pandas, SciPy, PyMC, Tampermonkey
Courses: Deep Learning for NLP, Machine Learning, Artificial Intelligence, Linear Algebra

PROJECTS

ToMCAT Project ($7.5M DARPA funded), University of Arizona, ML4AI and IVILAB
- Developing AI models utilizing dynamic Bayesian networks and Theory of Mind concepts. Integrated physiological data from fNIRS and EEG, along with facial expressions, to enhance predictions of individual behaviors and team dynamics in search and rescue missions, increasing decision-making accuracy by 30%.
- Conducted Posterior Predictive Analysis, cross validation and correlation analysis on multi-modal data to improve human-coordination model performance.
- Analyzed pupil data with cognitive science principles to infer their emotions, supporting human-human and human-computer interaction.

Bot Development for Discord and Slack
- Leveraged RAG (Retrieval-Augmented Generation) for advanced natural language processing.
- Employed prompting and fine-tuning methods to customize responses and enhance performance.

Google Calendar Integration with ChatGPT Discord Chat Bot via Node.js:
- Deployed the chatbot on **Amazon EC2** for continuous operation and accessibility.
- Integrated the **Google Cloud API** using Nginx for users to schedule and manage events through Discord.
- Implemented and tested advanced error handling and logging mechanisms to ensure robust operation.