Minglai Yang

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WORK EXPERIENCE

CoreTechs Consulting Inc.   **Kensington, Maryland**
Software Engineer Intern (Full Time)   May 2024 – Aug 2024 (on-site)
- Build GPT bots for Discord and Slack, employing GPTs and Pinecone for natural language processing and document retrieval, integrating Slack into official websites through live chat in Javascript.
- Orchestrate end-to-end website development, including design, deployment, and management on **AWS** with **Nginx**, **Docker**, and services like **EC2**, **RDS**, and **S3**.
- Utilize HTML, CSS, JavaScript, and PHP, alongside **GitLab** for version control and deployment.
- Create **React** "Live-Chat" applications to optimize workflows and enhance user experience.
- Simulated 500 concurrent users with **Selenium** to rigorously stress test the web application's performance.

The University of Arizona, Institute for Computation and Data-Enabled Insight   **Tucson, Arizona**
AI Engineer - Lead   Mar 2024 – Present
- Lead and optimize **GPT**-based models to process 40% more tokens per request, reducing operational costs by 25% while maintaining high model performance.
- Increase accuracy of roadway defect detection by 15% using **OpenCV** library and **YOLOv10** model.
- Develop an AI for Minecraft using video training, reinforcement, and imitation learning, achieving 25% improvement in task execution speed and adaptability in dynamic environments.

The University of Arizona, ML4AI LAB and IVILAB   **Tucson, Arizona**
Undergraduate Research Assistant   Oct 2023 – Present
- Develop 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 plans and goals.
- Collaborate with Dr. Kobus Barnard, Dr. Clayton Morrison and Dr. Adarsh Pyarelal to translate advanced machine learning research into practical, deployable AI systems for real-world impact.

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, Top 1/
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

PROJECTS

ToMCAT Project ($7.5M DARPA funded), University of Arizona, ML4AI and IVILAB
- Developed 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 cross-validation and correlation analysis on coordination data to improve model performance.
- Analyzed pupil data with cognitive science principles to enhance human-computer interactions.

Darts Game Website Deployment with AWS and Docker
- Designed and deployed a darts game website using **Nginx** and **Docker**.
- Hosted on **AWS** with **EC2** for server management, **RDS** for database handling, and **S3** for data storage.
- Managed versioning and automated deployment via **GitLab**, boosting workflow efficiency and reliability.

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.
- Integrated **Pinecone** for efficient document retrieval, solving hallucinations in communication channels.

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.

CERTIFICATIONS & TRAINING

Citi program, Social & Behavioral Research Investigators
Citi program, Native American Research