Weibing Wang

+1 (608) 609-4109 ∧ +86 15101157389 | wwang652@wisc.edu ∧ weibingwangwe@outlook.com | weibing-wang-w

Education

University of Wisconsin–Madison September 2021 - Present
Bachelor of Science in Computer Science and Mathematics *Madison, Wisconsin, USA*

GPA: 3.71/4.0 Credits: 156

Honors: Dean's List (Fall 2021, Fall 2022, Fall 2023, Spring 2024), Golden Key International Honour Society Member

Computer Science Courses: Data Structures and Algorithms, Artificial Intelligence, Database Management Systems, Machine Learning, Data Modeling and Big Data Systems.

Mathematics Courses: Linear Algebra, Probability Theory, Combinatorics, Matrix in DS, Stochastic Processes and Data-Driven Systems.

Academic Experience

Research Interests: machine learning including natural language processing, reinforcement learning, data-driven optimization, Human-computer interaction (HCI); open to other related fields.

Researcher September 2024 - Present
Data-Driven Optimization of Embodied AI at JINGDONG Logistics X-Lab *Beijing, China (Remote)*

* Designed and implemented an advanced data augmentation pipeline using generative adversarial networks (GANs) to create synthetic datasets, expanding training data variability and increasing model generalization capabilities.
* Applied Bayesian optimization and reinforcement learning to refine robotic grasp selection, achieving a 25% reduction in failed grasp attempts.
* Implemented a semi-supervised learning framework using a teacher-student model, significantly enhancing the algorithm's grasp success rate.
* Contributed to the development of a high-fidelity simulation environment integrating sensor fusion techniques for real-time testing and validation of grasping algorithms in industrial conditions.

Research Assistant January 2024 - April 2024
AI Tutor Using LLMs, Advised by Dr. Meena Syamkumar *Madison, Wisconsin, USA*

* Developed a web scraper using Selenium and TF-IDF for keyword extraction from forums and course platforms.
* Created OCR middleware with Tesseract for educational information extraction from images.
* Utilized NLTK and LangChain for text chunking, OpenAIEmbeddings for vectorization, and FAISS for storage.
* Built a conversational tutor using retrieval-augmented generation (RAG), optimizing context handling and chat log compression.

Research Assistant January 2024 - September 2024
AR-Saliency, Advised by Prof. Yuhang Zhao *Madison, Wisconsin, USA*

* Implemented a cross-device spatial anchor system using Azure, improving synchronization accuracy by 20% across AR devices.
* Enhanced real-time 2D target detection capabilities by integrating both RTMDet and YOLOv8 models, achieving an 8% improvement in recognition speed and accuracy.
* Developed a Flask backend integrated with RabbitMQ for efficient task distribution, improving system responsiveness by 40%.
* Conducted model benchmarking between RTMDet and YOLOv8 to optimize object detection performance in AR environments, balancing speed and accuracy for different use cases.

Researcher July 2020 - December 2021
Data Analytics in Software Ethics, Advised by Dr. Jinan Liu *Beijing, China*

* Conducted Python analysis on developer response datasets to evaluate ethical practices.
* Engineered machine learning models, including logistic regression and random forests, for predictive user behavior analytics.
* Visualized cross-cultural disparities in ethical coding practices using Tableau and Power BI.

Work Experience

Algorithm Engineer Intern May 2024 - August 2024

JINGDONG Logistics X-Lab *Beijing, China*

* Analyzed millions of data records using Apache Spark for large-scale distributed data processing, including implementing ETL pipelines and real-time data streaming with Spark Streaming.
* Conducted feature engineering tasks such as feature selection, extraction, and transformation. Utilized transformer models for deep learning tasks like text classification and sequence prediction, and implemented hyperparameter tuning and model optimization using PyTorch.
* Drafted technical papers based on research findings and collaborated with business units to gather requirements. Performed data cleaning, normalization, and augmentation to improve dataset quality for comprehensive analysis.

Undergraduate Peer Mentor / Tutor May 2024 - Present

Department of Computer Sciences, University of Wisconsin–Madison *Madison, Wisconsin, USA*

* Assisted in teaching CS571 under Prof. Yuhang Zhao and Cole Nelson, covering topics in human-computer interaction (HCI), web development, React, and React Native frameworks.
* Provided guidance on HCI principles and best practices in UI/UX design, including accessibility considerations and user testing.
* Supported students in building functional and responsive user interfaces using modern web technologies and frameworks.

Projects

Holos VR Medical System | *Python, OpenCV, AWS Lambda* Holos, Inc., May 2024 - Present

* Cooperated with Holos, Inc. designed and implemented 3D skeletal modeling for medical data analysis and tutoring, deploying computer vision techniques to accurately reconstruct skeletal structures in virtual environments.
* Developed spatial depth interaction features, enabling real-time manipulation and examination of 3D models in VR, enhancing the accuracy and usability of medical information for healthcare professionals.
* Integrated high-throughput data transmission APIs using AWS for seamless data flow between VR systems and cloud infrastructure, ensuring real-time interaction with minimal latency.
* Built and optimized a pipeline for large-scale data processing, reducing data transmission delays by 30% and increasing the system's responsiveness for medical simulations.

Geospatial Social Media Platform | *Android Studio, Java, Firebase* September 2023 - December 2023

* Developed a modular social media platform that allows users to share multimedia content (text, images, videos) and engage in interactive discussions
* Integrated geolocation services and spatiotemporal models using Google Maps API, enabling users to share location-based content and visualize community activity over time, enhancing data-driven insights for user interactions.
* Built scalable API interactions using Firebase for authentication, data storage, and cloud messaging, supporting real-time data syncing across user devices and ensuring consistent data integrity across the platform.
* Optimized backend infrastructure to manage high volumes of user-generated content, improving server performance by 25% through load balancing and dynamic resource allocation, supporting up to 100K concurrent users.

Deep Learning Model for Climate Prediction | *PyTorch, LSTM, ResNet* September 2022 - December 2022

* Developed automated data preprocessing pipelines using PyTorch, ensuring clean and structured input for time series analysis, reducing preprocessing time by 40%.
* Implemented LSTM and ResNet models for time series prediction of ice cover, achieving a 15% improvement in prediction accuracy compared to baseline models, validated through cross-validation on climate datasets.
* Conducted feature engineering and hyperparameter tuning to enhance the performance of the models, resulting in more precise long-term climate predictions that inform environmental policy decisions.

Extracurricular Honors & Awards

Accepted Paper: "Software Developers Response to Unethical Coding Task Request" at the 8th ICSTR Singapore.

Under Review: "Multi-sourced AI Tutor for Non-Native English Speaker Students" at ACM SIGCSE.

Work in Progress: "Semi-Supervised Learning and Data-Driven Gripper Optimization for Efficient Parcel Sorting in Logistics Systems," advised by Prof. Desheng Zhang.