Haocheng (Harvey) Yuan

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Education

University of California, San Diego (UCSD) *Master of Science in Computer Science* 09/2024 – 03/2026 (Expected)
University of Nottingham, Ningbo China *Bachelor of Science in Computer Science* **GPA:** 3.94/4.0, Top 5% 09/2020 – 06/2024
Study Abroad, University of Nottingham, United Kingdom *Bachelor of Science in Computer Science* 09/2022 – 06/2023

Skills

Programming Languages: Java, Python, C/C++, Haskell, SQL, HTML, JavaScript
Tools & Frameworks: Node.js, VUE, Jest, Linux, Git, Spark, PyTorch, TensorFlow, LangChain
Libraries: Matplotlib, Seaborn, Scikit-learn, OpenCV, Pandas, NumPy, Transformers

Work Experience

Software Development Intern 6/2021 - 12/2021
IceWould, Software Development Team

- Developed a WeChat mini-app utilizing **JavaScript** and **Java** to generate augmented reality (AR) previews of makeup effects
- Designed a user-friendly interface using **React**, integrating a third-party AR tool to enhance the user experience; utilized **Spark SQL** to analyze user interactions and optimize UI features based on data insights on **Alibaba Cloud**
- Led automated **CI/CD testing** and established black-box test sets for **Random** and **Metamorphic Testing**, reducing manual testing time; performed Code Inspection within the **Quality Assurance** team to ensure code reliability

Selected Project

Full-stack Software Development 09/2022 - 05/2023

- Developed a mixed reality electronic tour guide system for the Djanogly Art Museum; Led a five-member Agile team; Coordinated with museum stakeholders
- Built the back-end with **Java** and **Google Cloud Platform** (Firebase IaaS), and the front-end with **Vue**, **Node.js**, and **Cordova**; Connected both ends via **REST** API and implemented automated testing with **Jest**
- Integrated the **OpenCV** API to implement "Artcode" image recognition technology, enabling the app to scan and process formatted images, triggering specific actions that enhanced app functionality and user engagement

Large Port Scheduling and Optimization 08/2023 – 06/2024

- Developed a **Reinforcement Learning** (RL) system based on the **Actor-Critic** algorithm and **LSTM**; improving the truck and AGV (Automated Guided Vehicle) dispatching efficiency by 34% at a major global port
- Integrated a data-driven **genetic programming** algorithm to address the sparse reward problem in large-scale port operations, reducing congestion between ships and cranes by 13%
- Proposed a surrogate model and developed a **Unix/Linux distributed training** platform to expediting optimal solution searching; introduced a new **evolutionary algorithm** (Hyper-Heuristic) to improve overall scheduling efficiency by 18.6%

Topic Modeling for Scientific Articles 09/2024 – 12/2024

- Developed a **BERT** model to classify topic labels to scientific articles, utilizing advanced NLP techniques; Integrated the Regularized-Dropout (**R-Drop**) strategy to enhance model performance, achieving a 9.2% performance improvement.
- Applied Parameter-Efficient Fine-Tuning (**PEFT**) methods and pretrained **LoRA** adapters to optimize the model, significantly reducing computational overhead while maintaining high predictive accuracy.
- Utilized Retrieval-Augmented Generation (**RAG**) to enhance the output of transformer with external knowledge; Developed **ColBERT** ranker(Contextualized Late Interaction) using **LangChain** tools for **zero-shot** transfer retrieval from BERT.

Publications

- **H. Yuan**, X. Chen, J. Zhu and R. Bai, "A Simulation Hyper-Heuristic Method for Multi-Floor AGV Delivery Services in Hospitals," 2023 IEEE Symposium Series on Computational Intelligence