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
Tools & Frameworks: Docker, Linux, Git, Hadoop, Spark, Android, PyTorch, MySQL, Qiskit
Libraries: SciPy, Matplotlib, Seaborn, Scikit-learn, OpenCV, Pandas, NumPy

Research Experience

Research Assistant, Large Port Scheduling and Optimization 08/2023 – 06/2024
University of Nottingham, Digital Port Lab

- Developed a Reinforcement Learning (RL) system using the Actor-Critic algorithm and LSTM network; improving the dispatching efficiency of truck transportation in Ningbo Zhoushan Port by 34%
- Employed a data-driven genetic programming algorithm (searching in NP) into this RL framework; solving the sparse reward problem of RL in the large-scale port and reducing congestion between ship and crane by 13%
- Introduced the time series Heatmap in computational optimization as a feature of the complex simulation environments of RL training platform

Research Assistant, Factory Human Body Tracking System 05/2022 – 09/2022
University of Nottingham, Computer Vision and Intelligent Perception Lab

- Designed a Resnet-based model that identifies workers present in illegal areas of the factory to avoid injury
- Enhanced the performance of ResNet for human re-identification by integrating a Siamese CNN architecture, achieving a 3% improvement on the Market1501 dataset.
- Conducted transfer learning to fine-tune the offline model based on the factory's realtime data and improved the accuracy (12%) in intelligent security protection systems

Research Assistant, Autonomous Guided Vehicles Swarm Dispatching in Hospitals 07/2023 – 12/2023
University of Nottingham, Artificial Intelligence and Optimisation Lab

- Developed an Autonomous Guided Vehicles (AGV) swarm scheduling system to enhance operation efficiency; integrated Isaac Sim for realistic robotic operations and built back-end API with Robot Operating System
- Proposed a surrogate model and developed a distributed training platform to expediting optimal solution searching on the hospital scenario; introduced a new Hyper-Heuristic algorithm to improve AGV scheduling efficiency by 18.6%
- Conducted a trial on solving the Traveling Salesman Problem in hospitals using Quantum Computing, applying the Quantum Approximate Optimization Algorithm written in Qiskit

Professional Experience

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

- Developed a WeChat mini-app using VUE to generate AR-based preview images of makeup effects, enhancing the user experience; utilized Spark SQL to analyze user data hosted on Alibaba Cloud.
- Led automated CI/CD testing and established black-box test sets for Random and Metamorphic Testing; performed Code Inspection as part of the Quality Assurance team

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