Zhenfan Zhan

Mobile: 80677583 | Email: e1184294@u.nus.edu

Profile

- NUS Industrial and Systems Engineering Master's student and Research Assistant at C4NGP. Specialized in advanced simulation and data analysis for transportation.
- Eager to apply innovative modeling techniques to solve real-world challenges in port and supply chain management.

Education

National University of Singapore **08/2023-01/2025**
Degree: Master of Science in Industrial and Systems Engineering GPA: 4.38/5.0
Core Modules: Data Analytics for Industrial Systems Engineering, Stochastic Models and Theories, Statistical Learning in Engineering, Applied Engineering Statistics, Cost Analysis & Engineering Economy, Statistical Learning in Engineering

South China Agricultural University, China **09/2019-06/2023**
Degree: Bachelor of Industrial Engineering GPA: 4.09/5.0 (rank top 2)
Core Modules: Logistics Engineering, Lean Production, Introduction to Industrial Engineering, Object-oriented Programming Development (JAVA), Principles and Application of Database
Awards: Third-class Scholarship in 2020; Second Prize of IT Farm Games Development

Research Experience

Unity-Based Visualization Module for Simulation Data **02/2024 - Present**
Software Developer

- Visualization Module Development in Unity: Engineered a robust visualization tool using Unity, capable of rendering 3D simulation animations from input data.
- Integration with Simulation and Network Models: Designed the module to seamlessly process simulation outputs and network model data, facilitating an intuitive representation of logistics dynamics.
- Interactive 3D Simulation Demonstrations: Created a user-friendly interface allowing stakeholders to visualize and interact with the simulation data in a three-dimensional space, enhancing understanding and engagement.

Develop and verify simulation framework(PathMover) **01/2024 - Present**
Simulation Engineer

- Real-World Port Map Adaptation: Customized the PathMover package to align with actual port layouts, ensuring high fidelity in simulation scenarios.
- Speed Function Testing & Optimization: Conducted extensive testing of various speed functions within the simulation to determine optimal settings for accurate vehicle movement representation.
- Performance Metrics Development: Developed and fine-tuned key performance indicators for comprehensive evaluation of logistics operations within the simulated environment.
- VISSIM Comparative Analysis: Performed a parallel analysis with VISSIM simulations, providing a benchmark for validating the efficacy and utility of the PathMover package in real-world port operations.

Innovative Velocity Integration for Dynamic Traffic Simulations **07/2023-12/2023**
Independent Researcher

- Innovative Traffic Dynamics Modeling: Originated a Python-based Dynamic Traffic Simulation (DTS) model integrating the Intelligent Driver Model (IDM) to elucidate phenomena of traffic jams without visible bottlenecks
- Data-Driven Analysis & Synthesis: Utilized the DTS model as a novel data generation tool, enhancing the understanding of complex traffic flow patterns

- Speed Distribution Synthesis for DES: Engineered a novel approach to speed generation in DES by categorizing and integrating diverse speed distributions, derived from DTS data, to accurately reflect varying traffic conditions
- Comparative Simulation Validation: Conceptualized and executed a Discrete Event Simulation (DES) model, establishing its viability for analyzing and improving traffic networks

DES Model Development for Agent Robot Fleet Management **11/2023-01/2024**

Research Assistant

- Velocity Profile Development for DES Model: Spearheaded the creation of the velocity profile logic in an advanced Discrete Event Simulation model, crucial for simulating industrial robotic fleets
- Traffic Engineering model application: Utilized the Greenshields velocity model for accurate computation of traffic dynamics, demonstrating proficiency in applying complex mathematical models to real-world scenarios
- Statistical Analysis for Model Validation: Employed Little's Law to identify key statistical indicators for validating the DES model, ensuring the model's accuracy and reliability

Field Hospital Facility Design and Deployment Plan **01/2022-07/2022**

Leader

- Analysed the overall process and patient data of field hospital, established a simulation model through ExtendSim 10, then further analysed simulation results combined with problem description, identified the bottleneck problem, and eventually optimised facility design and deployment plan based on corresponding indicators to improve the operation efficiency of the emergency department of the field hospital
- Obtained the Good Prize in the Tsinghua national Industrial Engineering Competition

Internship Experience

Midea Group Co., Ltd., China **08/2022-11/2022**

Software Test Engineer within the AI Innovation Center

- Responsible for the upgrade of the OTA cloud platform and the test of robot voice performance
- Launched tests more than 20 times and found 17 Grade B bugs in total
- Utilised the extremum method to test ultimate recognition noise ratio in testing the DOA sound source localisation and wake-up rate of voice intelligent robot; reached the target of requirement analysis-95% accuracy
- Took orthogonal test method to test OTA upgrade process of sub-device firmware and processed abnormal conditions such as the robot’s failure to automatic upgrades under the charging status

VIPSHOP, China **06/2022-06/2022**

Supply Chain Management Intern within the Business Department

- Responsible for project reviews and walking inspection tasks
- Verified customer feedback and communicated with suppliers to correct product information
- Reviewed more than 1000 work orders during the internship and developed a general understanding of warehousing, supply chain and the whole process of e-commerce

Extracurricular Projects

Independent game development project **03/2020-11/2020**

Developer

➢ Module making group: making the models of characters and weapons through model capture tools, then creating the skeletons of characters and weapons and skinning them in 3DMAX with the animation package of the mall. Finally binding the bones to corresponding animations and fine-tuning. Root animation and seamless animation mode adopted in the game development will greatly increase the highlights and features of the game.

➢ Programming group: writing different parent classes for subsequent development, such as character class,

equipment class, and various component classes. The character classes are divided into friendly. And enemy classes, and sub-classes are created for mages, archers and melee.

➢ Effects group: adding particle effects and footsteps to the set animation, combining particle effects to create different magic effects.

Skills and Hobbies

Language: Chinese (Native), English (IELTS 7.0), Japanese (Primary)
Computer: Python, Java, CAD, SQL, Xmind, UE4, PowerPoint, Excel
Hobbies: Basketball, Ping-pong, Sports Fitness, Dubbing