Yan-Shuo Li

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Education

National Central University (NCU) Sept. 2022 – June 2024
MS in Mathematics *Taoyuan, Taiwan*

- Research interests: multi-robot systems, informative path planning, and reinforcement learning
- Thesis: Multi-robot Search in a 3D Environment using Submodularity with Matroid Intersection Constraints
- Thesis Advisor: Prof. Kuo-Shih Tseng
- GPA: 3.46/4.00

Ming Chuan University (MCU) Sept. 2015 – June 2019
BS in Computer and Communication Engineering *Taoyuan, Taiwan*

- Undergraduate project: Detection of atrial fibrillation using 1D convolutional neural network
- Project Advisor: Prof. Chaur-Heh Hsieh
- GPA: 3.75/4.00

Research Experience

Robotic Search Lab [🌐] July 2022 – July 2025 (expected)
Research Assistant with Prof. Kuo-Shih Tseng *Taoyuan, Taiwan*

- Currently conducting research on multi-robot exploration with reinforcement learning.
- Developed algorithms for robotic search problems and published 2 first-author papers at ICRA 2024.
- Conducted real-world experiments on robotic search.

Work Experience

NCU Computer Programming and Application Course Sept. 2023 – Jan. 2024
Teaching Assistant *Taoyuan, Taiwan*

- Offered 2 hours of weekly office hours.
- Advised 8 students on debugging, problem-solving, and course comprehension throughout the semester.
- Graded and offered feedback on weekly coding exams.

NCU Calculus Teaching Team Sept. 2022 – June 2024
Teaching Assistant *Taoyuan, Taiwan*

- Offered 3 hours of weekly office hours.
- Advised an average of 5 students weekly on calculus assignments.
- Graded weekly assignments and exams, offering feedback to support student learning.

TAO Info [🌐] Feb. 2021 – June 2022
AI Engineer *Taipei, Taiwan*

- Designed a pharmaceutical inspection system, reducing pharmacists' medication inspection time by an average of 30% and decreasing the number of pharmacists needed by 50%.
- Developed a medication classification model using contrastive learning methods, achieving a detection error rate of 0.5% during on-site hospital testing.
- Developed multi-CNN models for inspecting damage in LCD displays, achieving 92% accuracy and reducing inspection time on the production line by about 30%.

EverComm Singapore (Taiwan Branch) [🌐] Mar. 2020 – Jan. 2021
Software Engineer *New Taipei, Taiwan*

- Developed a solar panel monitoring system, enhancing operational efficiency for enterprises and factories.
- Improved data processing efficiency with the NumPy library, reducing processing time by 75%.
- Developed an anomaly detection system to identify malfunctioning machines using k-means algorithm and autoencoder.

National Chung-Shan Institute of Science and Technology (NCSIST) [🌐] Jan. 2019 – June 2019
Machine Learning Intern *Taoyuan, Taiwan*

- Collected and analyzed historical time-series data on river levels and rainfall for flood forecasting project.
- Fine-tuned a CNN-LSTM model for a flood forecasting project, achieving a 14% reduction in root-mean-square deviation.
- Developed a face recognition access control system at NCSIST using FaceNet model.

Publications

Conference Proceedings

1. **Y.-S. Li** and K.-S. Tseng, "Computation-aware multi-object search in 3d space using submodular tree," *IEEE International Conference on Robotics and Automation (ICRA)*, pp. 5956–5962, 2024.
[📹] [📄]
2. **Y.-S. Li** and K.-S. Tseng, "Multi-robot search in a 3d environment with intersection system constraints," *IEEE International Conference on Robotics and Automation (ICRA)*, pp. 5963–5969, 2024.
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Journal Articles

1. **Y.-S. Li** and K.-S. Tseng, "Multi-robot search in 3d environments using submodularity with matroid intersection constraints," *International Journal of Robotics Research (IJRR)*, 2024 (under review).
2. C.-H. Hsieh, **Y.-S. Li**, B.-J. Hwang, and C.-H. Hsiao, "Detection of atrial fibrillation using 1d convolutional neural network," *Sensors*, vol. 20, no. 7, p. 2136, 2020.
[📄]

Patents

1. **Y.-S. Li**, P.-T. Lin, and K.-S. Tseng, "Multi-Vehicle Spatial Balanced Coverage System and Method," U.S. Patent (pending)

Skills

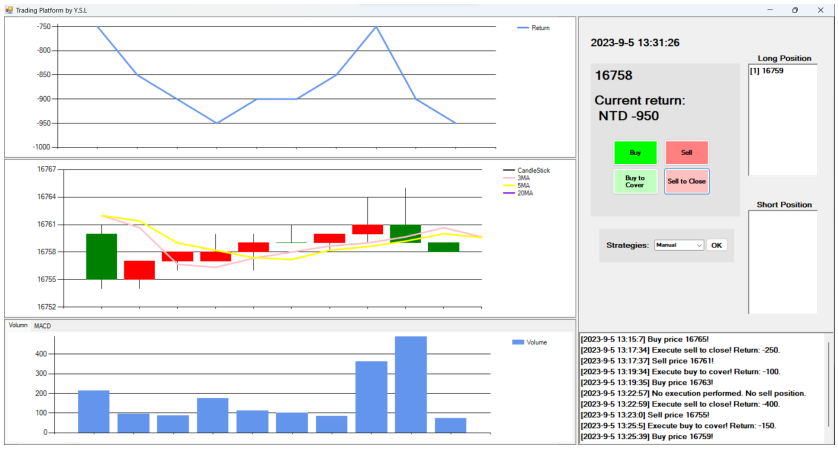
Professional: Deep Learning, Machine learning, Object detection and tracking, Matroid theory, Compressed sensing
Programming Languages: Python, C/C++, Java, JavaScript, SQL, Bash
Software: PyTorch, TensorFlow, OpenCV, Git, Docker, ROS, LaTeX
Languages: Chinese (Native), English (Fluent)

Projects

Trading Platform Spring 2023

Course project (Computer Programming and Application)

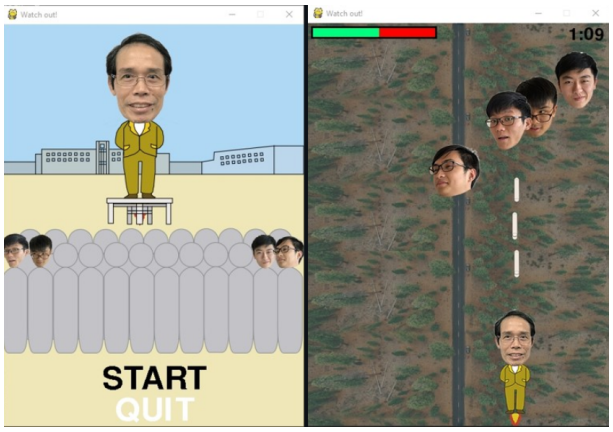
- Developed a simulated trading platform featuring total return, real-time market prices, trading volume, and basic trading strategies.



Shooting Video Game with Realtime Face Tracking Control Fall 2017

Course project (Video Analysis and Interaction Techniques)

- Developed a face-tracking controlled shooting game using pygame and dlib library.



Extracurricular Activities

Cedar Point Amusement Park June 2017 – Sept. 2017

Park Services Associate *Sandusky, OH, United States*

- Assisted approximately 20 customers daily by providing directions and addressing park-related inquiries to enhance their experience.
- Maintained the cleanliness of tables, pavilions, and food patios throughout the park.
- Worked 40 hours per week.

MCU People to People International Student Chapter [🌐] July 2016 – June 2017

Club Leader *Taoyuan, Taiwan*

- Led the club with over 20 international students.
- Organized club schedule including meetings, activities, and events.
- Won the "Best Club Award" (1 out of 7 clubs).