

Shaoze Yang

GRADUATE STUDENT

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Education

University of Michigan.

Michigan, U.S.

M.S. IN COMPUTER AND INFORMATION SCIENCE

Sept. 2023 - Pre.

- GPA: 3.95/4.00
- Related Courses Taken (partial):
Reinforcement Learning | Information Retrieval | Natural Language Processing | Database Application Design | SQL & Database.

University of Michigan - Shanghai Jiao Tong University Joint Institute.

Shanghai, China

B.S. IN ELECTRICAL AND COMPUTER ENGINEERING, MINOR IN DATA SCIENCE

Sept. 2020 - Aug. 2024

- core GPA: 3.72/4.00 rank: 39/224
- Related Courses Taken (partial):
Data Structures & Algorithms | Adv. Computer Architecture | Design of Microprocessor Based System | Methods and Tools for Big Data.

Research

The Boeing Company - Industrial & Operations Engineering

Ann Arbor, US

PREDICTING AND OPTIMIZING WORKERS' TRUST TOWARD AUTONOMOUS VEHICLES IN MANUFACTURING PLANTS

Sept. 2023 - Pre.

- Co-supervised by Prof. Xi Jessie Yang and Al Salour, Technical Fellow at Boeing
- Formulate a vertical FSM-based algorithm boosting pedestrian behavior analysis, achieving a 12% accuracy uplift. The paper (first author) **"Identifying Worker Motion Through a Manufacturing Plant: A Finite Automaton Model"** was accepted by IEEE conference RO-MAN.
- Based on Temporal Fusion Transformer and VQ-VAE, developing trajectory prediction models. Achieve RMSE < 1m in 4s prediction.
- Analyze vast experimental data from virtual environment, ensuring real-time communication between Unreal Engine and Python model.
- Integrate ML model to Unreal Engine, enabling real-time prediction and control of AGV.
- Develop a Python-based UI (Dash/Plotly) for efficient data-labeling and data flow replay.

ARCAD Lab, Robotics Engineering

Ann Arbor, US

QUADRUPED ROBOT CONTROL AND EMBEDDING SYSTEM DEVELOPMENT

Oct. 2023 - Pre.

- Supervised by Prof. Yanran Ding
- On the Anymal robot, deploying teacher-student architecture to accelerate the training process of reinforcement learning model
- Under development: (Sim2Real) based on Unitree Go2 model, communicate with robot PC through Ethernet port and Unitree SDK
- Engineered and tested a Dynamometer to serve as the motor-testing platform. Developed a control framework facilitating seamless communication between computer, voltmeter, oscilloscope, and torque sensor.
- Research on the mechanism and control of Brushless DC motor, deploying PID algorithm for high-bandwidth feedback control.

SJTU AI Institute

Shanghai Jiao Tong University

STYLE ANALYSIS OF CHINESE LANDSCAPE PAINTING BASED ON ARTIFICIAL INTELLIGENCE

Dec. 2021 - Jul. 2023

- Developed a novel hierarchical model for the restoration of Chinese landscape paintings, effectively preserving fine-grained brushstrokes and artistic styles. Co-first author of paper titled **"Hierarchical Painter: Chinese Landscape Painting Restoration with Fine-grained Styles"** was published at journal Visual Intelligence.
- Led the design and experimentation of a segmentation-based detail generation model, enhancing the consistency and authenticity.

Experience

Motion Control Engineer Intern (MLE)

SJTU, Shanghai, China

DEEP ROBOTICS

May.2023 - Aug.2023

- Migrate "Agile but Safe" to Lite3 robot. Implement a hierarchical DRL model for motion control. [\[Github Repo\]](#)
- Reproduce deep tracking control, combining MPC-based and terrain-aware foothold planner with DRL-based motion control. Achieve robust control on extreme risky terrains. Investigate appropriate terrain encoders and reward functions.
- Modifying PPO algorithm, adding advanced features such as terrain encoder(GRU+LSTM) and symmetric data argumentation.

Quantitative Trading Data Analyst Intern

Shanghai, CN

ASSET PRO

Feb.2023 - May.2023

- Conducted in-depth research and successfully replicated mainstream fundamental factors.
- Explored correlation network factors, analyzing stock relationships from various perspectives, achieving an average 20-day increase of 3% through single-factor analysis.
- Responsible for researching the data quality of data suppliers, successfully replicating upstream and downstream industry relationship chain factors.

Projects

EV Charging Station Recommendation System

PROGRAMMER

University of Michigan

Sept. 2023 - Dec. 2023

- **Data scraping** using GoogleMap | Serp | NREL API.
- **NLP** comments using ChatGPT API & **prompt engineering**.
- LLM-based embedded vector space **personalization**.
- Item-item **reasoning** based on Collaborative Filtering & Relevance Matrix.
- “**Learn to Rank**” using LightGBM, automatic pseudo-label generation using ChatGPT & GoogleMap API.
- Integrated mainstream rankers such as **BM25**(core feature of Bing), TF-IDF, Pivoted Normalization, DirichletLM.
- **MEM-efficient** data structure based on inverted index
- **User Interface** based on Flask, GoogleMAP API
- Project on Github: **PlugStation-Recommendation-System**.

2-Wheel Self Balanced Robot

EMBEDDED SYSTEM PROGRAMMER & MECHANICAL DESIGNER

Shanghai Jiao Tong University

Sept. 2023 - Dec. 2023

- Deploy the **Linear Quadratic Regulator & PID** control algorithm for self-balancing.
- Design **PCB** for IO expansion and adapt to various peripherals.
- Realize efficient communication using **CAN Bus**.
- Integrate safety alerting using PWM & Buzzer and Battery monitoring using ADC.

Remote Control Mars Rover with Variable Chassis

TEAM LEADER & PROGRAMMER & MECHANICAL DESIGNER

Shanghai Jiao Tong University

Jul. 2021 - Aug. 2021

- Reproduce the classical mechanical chassis structure of **Curiosity, NASA**.
- Realize the function of automatic obstacles' avoidance.
- Realize the function of variable steering strategy.
- Finite element analysis for critical component.
- See portfolio page for details: **Mars' Rover**

Hex-crab, unmanned seabed landform detector

STRUCTURE DESIGNER & ALGORITHM PROGRAMMER

Shanghai Jiao Tong University

Nov. 2021 - July. 2022

- Realize the structure model of multi-legged bio-robot.
- Reproduce the gait strategy from another python project.

Skills

Programming	C, C++, Python, Java, HTML, CSS, JavaScript, Matlab, Verilog.
Digital Media	Photoshop, Premiere, After Effects, Illustrator, Audition, Final Cut Pro, Davinci.
Tools	SolidWorks, Mathematica, PyTorch, NumPy, Pandas, Dash, Flask, Git, \LaTeX .
Languages	Mandarin(native), English(TOEFL 104).
Others	Photography, Violin(Level 10), Travel & Pedestrianism

Extracurricular Activity

VEX U Community (Robotics Competition Team)

MEMBER OF MECHANICAL GROUP AND ADVOCACY GROUP

Shanghai Jiao Tong University

Oct. 2020 - May. 2023

- Mechanical structure designer of chassis, 20-21 Season. World record holder.
- Revealing and Instruction videos producer of 20-21 & 21-22 Season, accumulating 80k+ plays.

High-level Art Troupe

ASSOCIATE VIOLIN CONCERTMASTER & MEMBER OF ORCHESTRA

Shanghai Jiao Tong University

Oct. 2020 - Apr. 2023

- Participator of Long March Song Cycle Performance
- Participator of New Year Concert, 20 Winter.
- Participator of School Welcome Concert, 21 Fall.

Honors & Awards

Jul. 2024	The Lums fellowship, \$30k USD (Top 3%), Graduate Students	Ann Arbor, MI
Apr. 2024	Outstanding graduates of Shanghai (Top 3%), Undergraduate Students	Shanghai
July. 2023	GDP Explorer Scholarship (Top 5%), Undergraduate Students	UM-SJTU
Nov. 2022	John Wu & Jane Sun Sunshine Scholarship (Top 5%), Undergraduate Students	UM-SJTU
Oct. 2022	President's Award, Member of Orchestra, High-level Art Troupe	Shanghai
Sept. 2022	Golden Prize, “Internet+” Innovation Entrepreneurship Competition	Shanghai
May. 2021	Champion of Skill Competition, VEX U, Season 20-21	Shanghai China
Apr. 2021	First Prize, Asia Open, VEX U, Season 20-21	Xian, China