Shaoze **Yang**

GRADUATE STUDENT

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Education

University of Michigan.   *Michigan, U.S.*

M.S. IN ROBOTICS ENGINEERING & COMPUTER AND INFORMATION SCIENCE   *Sept. 2023 - Pre.*

- GPA: 4.00/4.00
- Related Courses Taken (partial):
  Reinforcement Learning | Information Retrieval | Data Manipulation & Analysis | 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 - Oct. 2024*

- core GPA: 3.72/4.00   rank: 39/214
- Related Courses Taken (partial):
  Data Structures & Algorithms | Intro. to Computer Organization | 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 for AGV control, achieving a 12% accuracy uplift compared to traditional time series forecasting algorithms. The paper was submitted to IEEE conference RO-MAN.
- Analyze vast experimental data from virtual environment, ensuring real-time communication between Unreal Engine and Python model.
- Develop a Python-based UI (Dash/Plotly) for efficient data-labeling.
- Optimize pedestrian trajectory prediction by LSTM and spatial transformer.

ARCAD Lab, Robotics Engineering   *Ann Arbor, US*

QUADRAPED 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
- Read multiple physical parameters from Isaac gym, including the contact conditions, friction coefficient, contact forces, elevation map.
- 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*

- Co-first author of paper titled **"Hierarchical Painter: Chinese Landscape Painting Restoration with Fine-grained Styles"**
- reproduce mainstream p2p neural network models for style translation.
- Predicating and fixing the flaws on traditional Chinese Landscape Painting.
- Research on new-style edge detection and texture generation.

Experience

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.

Instructional Aide   *SJTU, Shanghai, China*

ECE2700J INTRODUCTION TO LOGIC DESIGN   *May.2023 - Aug.2023*

- Held regular recitation classes per week in English.
- Held office hours to help students with their homework.
- Held Lab session, debug code for students.
- Grade homework and exams.

Projects

EV Charging Station Recommendation System
University of Michigan

Programmer
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 pesudo-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
Shanghai Jiao Tong University

Embedded System Programmer & Mechanical Designer
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
Shanghai Jiao Tong University

Team Leader & Programmer & Mechanical Designer
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
Shanghai Jiao Tong University

Structure Designer & Algorithm Programmer
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)
Shanghai Jiao Tong University

Member of Mechanical Group and Advocacy Group
Oct. 2020 - May. 2023

- Mechanical structure designer of chassis, 20-21 Season.
- Revealing and Instruction videos producer of 20-21 & 21-22 Season, accumulating 4w+ plays.

High-level Art Troupe
Shanghai Jiao Tong University

Associate Violin Concertmaster & Member of Orchestra
Oct. 2020 - Apr. 2023

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

Honors & Awards

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 10%)**, Undergraduate Students	*UM-SJTU*
Oct. 2022	**President's Award**, Member of Orchestra, High-level Art Troupe	*Shanghai*
Nov. 2022	**Second Prize**, 5th Chinese College Intelligent Robot Creative Competition, VEX U	*Nanjing, China*
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*