XAVIER CHEN

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SUMMARY

I have a solid background in Artificial Intelligence, including **mathematical tools** (Linear Algebra, Probability Theory, Optimization Theory, Random Process), **tech stack** (Python, PyTorch, Scikit-learn), **application** (Deep Learning, Bipedal Robotics, Self-driving with Carla, EEG analysis). However, given the bottleneck that computing resources constraints AI model performance, I am actively studying biology to build an elegant next-generation AI model, from perspectives of **system** (Neuroscience), **application** (Neuroimaging) as well as **experimental** (Data Science).

EDUCATION

University of California, San Diego, La Jolla, United States — Expected Graduation in Jun. 2026

- Master of Science in Computer Science.

University of California, Berkeley, Berkeley, United States — Aug. 2023 - Aug. 2024

- Coursework: Deep Learning, Optimization, Cognition Models, Probability Theory, Data Structures etc.
- GPA: 3.83/4.00.

MIT xPRO, Online, Professional Certificate in Data Engineering — Oct. 2023 - Jul. 2024

Technical University of Munich, Munich, Germany — Apr. 2022 - Sep. 2022

- Coursework: Applied Bio-robotics, Deep Learning

Tongji University, Shanghai, China — Aug. 2018 - Jul. 2023

- Bachelor of Engineering in Vehicle Engineering (Automobile), Minor in Artificial Intelligence
- Raw GPA: 4.34/5.00, 88.4%. Equal to 3.84/4.00 in US system.

SKILLS

Proficient Technical Skills:

- **Programming Languages**: Python, MATLAB, SQL, Java, C/C++, Assembly, Golang
- **Libraries & Framework**: PyTorch, Numpy, CVXPY, Scikit-learn, Pandas, Carla, MNE, Postman, Flask
- **Developer Tools**: VS Code, Anaconda, Jupyter Notebook, Docker, Raspberry Pi 4b, Proteus, Git
- **Language Skills**: Chinese, English, German

RESEARCH EXPREIENCE

Tongji University, Shanghai, China — Apr. 2023 – Jul. 2023

Research Assistant

- Designed a cognitive experiment. Subjects are shown pictures from four scenarios, including pictures, descriptions of the scenarios with parent language, and four sentences combining four scenarios.
- Participated in EEG collecting with 64 EEG cap and collected my own electroencephalogram data.
- Preprocessed raw data using the MNE Python library and developed EEG-NET with colleagues to classify EEG segments that are generated from different scenarios.
- Built a new network for the lab and enriched the lab database.

Technical University of Munich, Munich, Germany Apr.2022 – Sep. 2022
Graduate level researcher

- Using MATLAB, building bipedal robot models from mass-spring system to 6 degrees of freedom model.
- Developed and implemented an Untrainable Neural Network for locomotion control of a compliant bipedal robot, launching a Particle Swarm Optimization algorithm to optimize walking speed.
- Authored 7 reports throughout the research processes, including processes weekly or biweekly.

Institute of Fuel Spray and Combustion, Tongji University, Shanghai, China Dec. 2022 – Jul. 2023
Undergraduate Dissertation

- Constructed an Argon Cycle Hydrogen Direct Inject Internal Combustion Engine stand
- Executed over 100 engine bench tests under safety regulations to determine optimal control parameters that both maximize hydrogen efficiency and provide sufficient output power.
- Independently mastered GT-Suite Simulation Software, employing it to investigate global minimum point and Boundary Conditions (where the engine stalls) and analyze the effects of various parameters, including inlet pressure, inlet temperature, and the ratio of argon to oxygen.

Paper (Unpublished): Study on the Secondary Damage and Failure Behavior of the Bonding Interface After Repairing the Debonding of CRTS II Type Slab Track Mortar Layer. Sep. 2020 - May. 2021
Funded by Student Innovation Training Program, Tongji University
Under instruction of Professor Xu YuDe, College of Transporting Engineering, Tongji University

- Using Abaqus to simulate to model the damage process of track panels (crushing and deformation displacement) over time, temperature, and humidity with a track model from colleagues.
- Analyzed damage of panels of different locations, destruction trends over time, environmental parameters at critical damage points, as well as finding high dimensional parameters for further optimization.

Paper (Unpublished): Optimization Design for Express Bus Stops Stations. Mar. 2019 - Sep. 2020
Funded by Student Innovation Training Program, Tongji University
Under instruction of Professor Teng Jing, College of Transporting Engineering, Tongji University

- Subject proponent and project leader. The topic originated from the real experience of riding Dalian City Bus No. 505. Despite the 20-minute interval appeared on the departure schedule, in many cases it takes up to 50 minutes at the station to meet a bus.
- Participated in designing and sending out questionnaires. Conducting multiple bus rides, counting stop intervals and the number of people boarding and alighting at each stop.
- In charge of setting up Maximum Likelihood Estimation (MLE) model to analyze data and output optimized bus station routines.

LEADERSHIP PROJECTS

Team Leader of Chassis Group **Shanghai, China**
Tongji University ZEAL Eco-Power Sep. 2020 - Dec. 2021

- Participated in two chassis projects, designed, machined and assembled the prototype car Z201 and Z202.
- Researched, designed, and manufactured hydrogen fuel system for the first time, completing road tests.

Self-Driving Project
Under instruction of Professor Huang Yanjun, School of Automotive Studies, Tongji University

- Led a team to build an environment, design tests, and simulate vehicle locomotion
- Independently mastered Carla, an open-source self-driving platform, from the ground up
- Successfully deployed a compact obstacle detection computer vision model on Raspberry Pi 4b

EXTRACURRICULAR EXPERIENCE

Volunteer **Shanghai, China**

Tongji University Student Union Oct. 2021 - Nov. 2021

- Core staff in 2021 China International Import Expo, hosting provincial ministerial-level leaders.
- Planning customized exhibition route for every recipient, accompanying by the whole process and preparing for emergency response.
- Responsible for coordinating the exhibitor department, the organization department, and logistics department during the tour.

Advanced Open Water Diver Jul. 22nd 2023

- Specialty: Elephant Sealing, Underwater Navigating, Nitrox Diving, Deep Diving

Marathon Runner

- Berkeley Half Marathon, 2:08:38. Nov. 23rd 2023

AWARDS

- Won the 3rd Place in the 3rd Shell Eco-marathon China Station (UC Z201) Nov. 2021
- Won the 4th Place in the 3rd Shell Eco-marathon China Station (Prototype Car Z202) Nov. 2021
- Received the Third-Class Scholarship of Outstanding Student at Tongji University 2021
- Received the Third-Class Scholarship of Outstanding Student at Tongji University 2020
- Received the First-Class Scholarship of Outstanding Student at Tongji University 2019