Ting Xu

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Contact Information
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Education

Washington University in St. Louis **GPA: 3.72/4.0**
Master of Science in Electrical Engineering *Aug 2021 - May 2023*
Relevant Coursework: Machine Learning, Embedded Systems, Data Science, Signal Processing

Shanghai Maritime University **GPA: 3.51/4.0**
Bachelor of Engineering in Electrical Engineering *Sept 2017 - July 2021*
Relevant Coursework: Robotics, Control Systems, Image Processing, DSP, Circuit Theory

Work Experience

Technology Consultant *June 2023 - Present*
X2 Derivatives LLC (Now Byte Carnival LLC) St. Louis, MO

- Developed a GPT-based knowledge bot to address hallucination issues in language models by providing citation-backed answers.
- Collaborated with a legal firm to provide strategic insights, ensuring compliance and regulatory adherence for STEM-related projects.

Tutor (College-Level and Professional Adults) *Feb 2024 - June 2024*
Varsity Tutors Inc. St. Louis, MO

- Delivered customized tutoring sessions in Mathematics, Physics, Computer Science, and professional development for diverse learners.
- Designed individualized learning plans that resulted in measurable academic improvement.

Technical Support Specialist *Aug 2021 - May 2023*
Washington University in St. Louis St. Louis, MO

- Streamlined routing for the tech support group by analyzing daily operations, significantly reducing travel distances and boosting campus-wide efficiency
- Automated the pricing inquiry process for an EdTech project by developing a Python script with Selenium to systematically gather pricing data from vendor websites.

Exchange Program Coordination Intern *Feb 2018 - June 2018*
International Association for the Exchange of Students for Technical Experience (IAESTE) Shanghai, China

- Facilitated the onboarding of overseas interns and organized cultural exchange events, improving participant satisfaction.
- Matched candidates with international roles, coordinating communication across multiple stakeholders.

Skills

Programming: C, Python, MATLAB, C#, SQL, Shell, Git, Docker, AWS, Node.js, REST API
Machine Learning: SciKit, PyTorch, TensorFlow, LLM, Transformers, AWS Sagemaker, Yolo
Engineering: Embedded Systems, RTOS, MCU, DSPs, Oscilloscope, AWS IoT, I^2C, CAD, Altium
Music Technology: MIDI, Music Theory, librosa, music21, Signal Processing, MIR
Research: LaTeX, Zotero, Overleaf, Data Analysis, Data Scraping, SPSS, Manim

Manuscript Under Review

- Zhu, L., Xu, T., Wu, Q., Huang, M., Gao, N., Wang, K., & Blaabjerg, F. (2024). *Design, Optimization, and Experimental Study of a Novel Direct-Driven Linear-Rotary Wave Generator*. Submitted to IEEE Transactions on Energy Conversion.
- Zhu, L., Xu, T., Ji, H., Fan, R., Huang, M., Gao, N., & Blaabjerg, F. (2024). *3-D Analysis and Experimental Verification of A Novel Magnetic Lead Screw with Checkerboard Array Magnetic Pole*. Submitted to IEEE Transactions on Transportation Electrification.

Awards

Scholarship for Foreign Students in Natural and Engineering Sciences, Agricultural and Forestry *2019*
Awarded by: German Academic Exchange Service (DAAD), Germany
Reference No.: 91753533 Program Code: 57423938

Research Experience

Robotic Software Research Assistant *Sept 2020 - June 2021*
ROV Research Lab, Shanghai Maritime University Shanghai, China

- Conducted research on thrust allocation and developed an optimized algorithm in MATLAB using the Singular Value Decomposition (SVD) method to improve propulsion efficiency.
- Transformed the user experience and interface for ROV control by using .NET and C# to integrate a PS4 Controller, making it easier for non-professional users to operate and improving both accessibility and innovation in how users interact.

Embedded Systems Research Assistant *July 2019 - Sept 2019*
Hochschule Emden Leer Emden, Germany

- Developed and implemented device drivers for sensors with SMBus/ I2C interfaces on the nRF52840 platform using Embedded C for Riot-OS.
- Enhanced the testing efficiency by automating the process through the development of a dedicated testing program.

Computational Optimization Research Assistant *June 2023 - Dec 2023*
Department of Electrical Engineering, Shanghai Maritime University Shanghai, China

- Conducted computational optimization for a direct-driven linear-rotary wave generator (LRWG) using response surface methodology (RSM) and genetic algorithms to improve energy efficiency.
- Developed multi-objective optimization models to minimize material use and enhance system performance, emphasizing parameter sensitivity.
- Built 3-D analytical models for magnetic lead screws with Python and MATLAB, validated against finite element analysis (FEA).
- Automated data analysis workflows to enable real-time comparisons between theoretical and experimental results.

Related Projects

CI Simulator **Skills**: Python, librosa

- Simulated the auditory experience of cochlear implant users using the Librosa library, comparing processed sound with original audio to analyze perceptual differences.
- Analyzed the effectiveness of noise reduction algorithms by evaluating discrepancies between simulated cochlear implant output and original sound.

Ezzy Job **Skills**: Selenium, Grafana, PostgreSQL, REST API, Node.js, Docker

- Built a backend scraper to auto-collect job postings from Indeed by location and position.
- Developed a Node.js job tracker with enhanced UI/UX and integrated Grafana for real-time insights.

A Metronome Using TENS Unit 🖿 **Skills**: I2C, GPIO, AWS IoT, MQTT, Python

- Developed an innovative embedded system that integrates Raspberry Pi, TENS technology, and AWS IoT to provide rhythmic guidance to musicians through targeted muscle stimulation, enhancing their timing and overall performance.
- Leveraged AWS IoT services for remote control and synchronization of the metronome, pioneering a new approach in music performance technology that could also aid in muscle relaxation and optimize performance.

Application of DAS in Suicide Prevention **Skills**: Python, SciKit-Learn, Data Science

- Created ML models to predict suicide risk from CDC data, improving early detection and personalized prevention.
- Applied data analytics to identify high-risk individuals and develop targeted interventions.

Quiet Cool: ML for Fan Control 🖿 **Skills**: Python, Flask, TensorFlow, Machine Learning, REST API

- Developed a server application with a REST API to dynamically control GPU fan speeds based on temperature readings, with a fallback mechanism to ensure stability in non-standard environments.
- Designed a custom ML model to balance fan noise and GPU temperature, achieving significant cooling efficiency improvements on enterprise servers like Dell PowerEdge R720.
- Implemented monitoring, logging, and fallback controls to ensure consistent performance under varying workloads.