Xiangbo Cai

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Education

BS **Michigan State University**, Computer Engineering — Aug 2023 – Dec 2026

- GPA: 3.89/4.00
- Dean's List: 2023-2024, Honors College
- **Coursework:** Python, C/C++, Verilog, Algorithm & Data Structure, Digital Logic, Microprocessor Design, Embedded System, Circuits Analysis, Discrete Structure, Probability, Linear Algebra, Multivariable Calculus

Experience

MSU Non-Destructive Evaluation Laboratory, Research Assistant — East Lansing, MI, Oct 2023 – Dec 2024

- Researched under Dr. Yiming Deng in works related to NDE, electromagnetism in the electrical engineering field
- Developed 3+ NDE techniques for curved pipeline via electromagnetism, PCB design and hardware circuit implementation
- Utilized CAD software, such as OnShape & SolidWorks, to design structures for NDE instruments for PCB in the pipeline

MSU Department of Computer Science & Engineering, Research Assistant — East Lansing, MI, Aug 2024 – Dec 2024

- Researched under the guidance of Dr. Zhichao Cao in works related to IoT, embedded system in the computer science field
- Currently working on embedded development with the nRF52840 board, simulating Bluetooth PDM data transmission and collection, and using Python for data processing. The results work will be applied on Bluetooth audio authentication
- Working in a group of 5 (most PhD students) and planning to present and publish research paper by the end of the semester

MSU Department of Mathematics, Teaching Assistant — East Lansing, MI, Aug 2024 – Dec 2024

- Managed MSU's College Algebra MTH 103 by teaching math concepts and mentoring 300+ students
- Provided teaching 5 hours each week with detailed feedback and work more than 2 hours in math learning center
- Answered students' questions with clear explanations confirming College Algebra mastery and led offline office hours

Outlier AI, LLM Developer & Trainer — Remote, May 2024 – July 2024

- Refined the AI software through 5-6 collaborative projects including Flamingo Tech and AI LLM models
- Worked in a bilingual environment (Chinese/English), evaluating Chinese responses generated by AI LLM model
- Analyzed work of other Outlier members to ensure over 30% precision & efficiency in feedback

Projects

Trackle — github repo

- Trackle is a privacy and accessibility-focused app that provides users with control

over their device's privacy settings. Trackle makes it easy to monitor, track, and adjust permissions such as geolocation, microphone access, and system changes in a user-friendly manner.

- Tools Used: C++, Flutter, Dart, Android Studio

C2L-Connect2Learn github repo

- Connect2Learn, A mobile application creating an academic social network that connects students to learning opportunities.
- Tools Used: Python, Flutter, Dart, Android Studio

Pipeline Inspection Robot github repo

- Developed a pipeline inspection robot that utilizes NDE techniques, which can detect defects in the pipeline and provide a visual representation of the pipeline's condition.
- Tools Used: Verilog

74LS161 Hexadecimal Counter github repo

- Simulated a 74LS161 integrated circuit to create a hexadecimal counter using Visual-Based Multisim and Verilog.
- Tools Used: Multisim, Verilog

Publications

Simulations of Hexadecimal Counters via the 74LS161 Integrated Circuit - Applications of Visual-Based Multisim and Verilog Projections Aug 2024

Xiangbo Cai, Peter Pena

10.36227/techrxiv.172349491.18651928/v1

Advanced Pipeline Inspection Robot Development Utilizing Non-Destructive Evaluation and Simulated with Verilog July 2024

Xiangbo Cai

10.2139/ssrn.4894242

Skills

Languages: C++/C, Python, Verilog, JavaScript, Dart

Technologies: Git, MATLAB, SolidWorks, OnShape, Multisim, SPICE, LaTeX, Flutter, Jupyter Notebook, Android Studio, Microsoft Office Suite