Jalen Andrew Mateo

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Detail-oriented engineer with a solid foundation in software development and electronics, passionate about solving complex problems. Skilled in software-driven projects and hands-on hardware, with a focus on creating innovative, integrated solutions.

EDUCATION

Singapore University of Technology and Design **(Class of 2025)**   ***Singapore***

- Computer Engineering Major with an AI Minor (Bachelor of Engineering)   **Sep 21 to May 25**
- SUTD Honours And Research Program (SHARP) and Junior Researcher Program (JRP)
- GPA 4.63/5.0, SUTD Global Merit Scholarship Holder

University of California Berkeley **(Global Leadership Program)**   **Jun 22 to Aug 22**

SKILLS

Programming Languages*:* Python, C, C++, MATLAB, Verilog HDL, LaTeX, Julia; Experienced with Git

Machine Learning & Data Science: PyTorch, Scikit-learn, Hugging Face Transformers, OpenCV, Pandas, NumPy; hands-on exposure to Information Retrieval, Machine Learning workflows, and Computer Vision applications.

Electronics & Hardware: PCB and Circuit Design, CAD, EM simulation (CST), and Robotics

Languages Spoken: English, Tagalog (Filipino) and Japanese (N2 Proficiency in JLPT)

WORK EXPERIENCES

Silicon Labs Validation Engineer   **Jul 25 to Present**

Silicon Labs Validation Engineer, Intern   **May 24 to Dec 24**
- Developed code for bench tests in Python and C, executed test procedures, and prepared detailed reports in formal formats.
- Enhanced test automation processes by creating batch files and Python scripts and authored comprehensive guides for team members and initiated the implementation of unit testing using pytest to improve project reliability.
- Improved the ML classification and software and hardware reliability of their in-house robotic arm used for characterization.

Fabrica AI, Intern   **Sep 23 to Dec 23**
- Revamped and optimized PCB designs for a tile grouting robot, significantly enhancing reliability and operational lifespan.
- Fine-tuned embedded software, contributing to improved system efficiency and performance during robot operations.

Research Assistant   **Sep 21 to Present**
- Performed data analysis using Pandas, Matplotlib and Seaborn and ran simulations using MATLAB and Python for various projects including EM wave photophone and Chaos Theory

PROJECTS

Publications
- Floquet engineering of topological phase transitions in quantum spin Hall alpha-T3 system - DOI: 10.48550/arXiv.2408.02093
- Logistic Map PRNG in FPGA – DOI: 10.48550/arXiv.2404.19246 , presented at IEEE MCSoC 2024

AI Solutions for Effective Student Learning Strategies (eledeck.com)   **Jan 24 to Apr 25**
- Designing and implementing AI solutions to improve students' study systems. Collaborating with NGOs to set up workshops and for beta testing of our innovative features which have been proven to increase student test scores by at least 20%

RAG for ArXiV Papers   **Oct 24 to Dec 24**
- Designed an end-to-end Retrieval-Augmented Generation pipeline leveraging Hugging Face Transformers, LlamaParse and the ArXiV database to extract, organize and cite concepts from research papers, enhancing knowledge discovery and accessibility.

Floquet Engineering of Alpha-T3 Spintronics System   **Jan 23 to Mar 25**
- Utilized Python (Kwant, PythTB), Julia, and MATLAB for advanced data visualization, quantum transport simulations, and numerical computations of physics models in an alpha-T3 spintronics system.

Fall Prevention Device for Hikers   **Jan 23 to Apr 23**
- Developed an algorithm and circuit, CAD-ing a scaled model for a reaction wheel mechanism to achieve fall detection and prevention for hikers. The device generates up to 70 Nm of torque, responding in milliseconds to correct user balance.

Keysight Engineering Challenge & RoboClash SUTD   **2023 & 2024**
- Led the design (CAD and electronics) of a sustainable, versatile all-terrain robot securing 3rd place among competitive entries.
- Engineered and programmed 2 autonomous robots, achieving 3rd place in two events, demonstrating excellence in robotics.