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Jethro Chia

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github.com/Shockz132
shockz132.github.io/Portfolio/

EDUCATION

Nanyang Polytechnic - Electronic and Computer Engineering 03/2023 - Present

- Cumulative GPA: 3.92
- Awarded Director's List (AY2023)
- Awarded Director's List (AY2024)
- Awarded A*STAR Scholarship (2024)
- Volunteered in the Peer Tutoring Program (2024)
- Plant Pulse Project 1st in NYP SEG TechNexus Project Showcase (2025)
- Plant Pulse Project nominated for Lee Hsien Loong - Interactive Digital Media - Smart Nation Award (2025)

Woodgrove Secondary School - GCE 'O' Levels 01/2019 - 07/2022

- L1R4 - 14
- In Charge of Logistics for Badminton (2022)
- Achieved Edusave Eagles award (2022), Most Improved Student (2019)
- Assistant in Charge of Logistics for Badminton (2021)

EXPERIENCE

Research Intern - Agency for Science, Technology and Research (A*STAR) 02/2025 - 04/2025

Complex Table Understanding Model Project

- **Table Extraction:** Evaluated and compared multiple table extraction methods, including Python libraries (e.g., img2table, PaddleOCR, Camelot-py), HTML, CSV, JSON, and LLM-based prompting for PDFs and images, to determine optimal performance across various file formats and methods.
- **LLM Prompt Optimization :** Refined Large Language Model (LLM) prompts, achieving a 15-20% improvement in extraction accuracy.
- **Research and Analysis :** Conducted in-depth research on table extraction techniques via Arxiv and ACL Anthology, synthesizing findings to draw actionable conclusions and recommend best practices.
- **Dataset Development :** Designed and built a QA pair dataset to rigorously test the model's performance, ensuring robust validation and reliability of results.
- **Industry Collaboration :** Contributed to a project involving Hyundai, processing tables from technical manuals.

ML & AI Intern - National Computer Systems (NCS) 09/2025 - 02/2026

Multi-Agent AI System (Proof-of-Concept)

- Enhanced a RAG-based AI agent with hybrid search, metadata filtering, and hallucination-aware regeneration using Milvus and Docling.
- Replaced LangChain with a modular ingestion pipeline and built a user-friendly React + FastAPI frontend with streaming responses and dynamic visual feedback.
- Implemented Text-to-SQL with auto-generated charts and evaluated response quality using an LLM-as-a-judge framework.
- Containerized the system with Docker for AWS deployment and produced demo videos used in pre-sales client pitches.

Logistics Scheduling Optimization System (Proof-of-Concept for MNC)

- Developed a React-based scheduling interface that translates abstract outputs into intuitive, date-based timelines with real-time feedback and visual progress indicators.
- Developed a dynamic configuration panel, enabling users to adjust trade-offs like runtime versus schedule quality.
- Built an operational dashboard with interactive charts and inventory summaries to support rapid feasibility assessment.
- Produced a polished demo video showcasing core features, used in internal reviews and client-facing pre-sales presentations.

PROJECTS

PlantPulse - Full Stack IoT Smart Community Garden Project Tailwind CSS, React TS, Python, SQLite

Awarded 1st in NYP SEG Tech Nexus Project Showcase 2025, and nominated for Lee Hsien Loong - Interactive Digital Media - Smart Nation Award 2025

- Led a group of 4 to develop a full-stack IoT solution enabling smart gardening through real-time monitoring, user management, and AI-driven advisory features.
- The frontend consists of a landing page, web dashboard, user authentication, and a chat page with AI advisor Sprout. Frameworks and libraries used include Nextjs, ShadCN UI, lucide-react, Spline 3D.
- The backend consists of a python web server using Flask, SocketIO and spaCy for the AI. Enabling real time communication between IoT devices and the users.

Logic Gate Circuit Solver - Personal Project HTML, React JS, C

- Developed a web app for users to create a logic gate circuit using the drag and drop UI and generate the respective truth table for the circuit. Built using React, Javascript, React Flow, and C.
- Users connect the nodes found on the logic gate blocks to construct the circuit and download the txt file that will be copied over to the directory of the C program and then run the C program to get the truth table.

Wings Of Sustainability - IoT Black Soldier Fly (BSF) Rearing Project Python, M5Stack, Qubitro, MQTT

- In a group of 3, developed an IoT system for a sustainable BSF rearing farm, utilising M5Stack micro-controllers to record environmental conditions and reduce manpower requirements by a significant percentage.

SKILLS

- **Software Development -** (Proficient): Python, HTML, CSS, Javascript, Typescript, React, LangGraph, LangChain, Docker, Github. (Familiar): AWS SageMaker, SQL, C, C# , React Native, hugging face
- **Electronic System Design and Analysis -** (Proficient) Electronic Circuit Analysis, Electronic Devices Applications and Digital Electronics. (Familiar): Autodesk Eagle, ATmega328pb, Soldering.
- **IoT System Design -** (Proficient) Arduino Uno, M5Stack Fire Duo, Beaglebone, Web SocketIO (Familiar): MQTT, Qubitro.

REFERENCES / ADDITIONAL INFORMATION

- **(Participated)** NUS HumanITy Hackathon 2025
- **(Participated)** BrainHack 2025
- **(Participated)** NCS AWS AI League 2025
- English (Native or Bilingual Proficiency)
- Chinese (Limited Working Proficiency)

Nanyang Polytechnic
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NCS
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