BENJAMIN MAH

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EDUCATION

University of Toronto   **September 2021 – April 2025**

BASc in Machine Intelligence Engineering, Engineering Business Minor

3.62 cGPA, Dean's Honour List 2021, 2022, 2023

Relevant Courses: Computer Algorithms and Data Structures, Digital and Computer Systems, Probability and Statistics, Engineering Mathematics and Computation, Linear Algebra, Fundamentals of Electric Circuits

EXPERIENCE

Machine Learning Engineer Intern   **May 2023 – Present**
Royal Bank of Canada (RBC)   *Toronto, Ontario*
- Worked within the Generative AI team within RBC's Technology and Operations Innovation Labs.
- Developed a machine learning application using semantic search and prompting techniques to parse, chunk, embed, match, and respond to user questions on financial libraries and databases in both IR and EQA stages.
- Used Python, LangChain, Gradio, and OpenAI completion/embedding models to improve accuracy by 67%.

Autonomous Aircraft Software Engineer   **September 2022 – April 2023**
University of Toronto Aerospace Team   *Toronto, Ontario*
- Responsible for developing and constructing an electric radio-controlled aircraft, an autonomous landing aircraft, and a payload ground rover for the SAE International Aerospace Competition in Texas.
- Programmed a Python script paired with a MavLink and ROS publication-subscription message system to autonomously land an aircraft on a target, improving success rate by 75% upon jettison.
- Developed search algorithms and optimized flying parameters to be used with LiDAR sensors.

Co-Founder, CTO   **March 2022 – April 2023**
FlipDoor   *Toronto, Ontario*
- Co-Founder and CTO of FlipDoor, a startup focused on implementing a mobile application using AI algorithms to improve pairing with landlords and tenants through the UofT Hatchery, a competitive startup incubator.
- Principal software engineer using MERN stack and data wrangling to build Tinder-like machine learning algorithm for the rental market, increasing client satisfaction rate by 55% from conducted surveys.
- Created Figma mockups, conducted market research, and presented business pitches to investors with a projected yearly revenue of $100,000 nationwide and awarded with $10,000 in funding.

PROJECTS

Dubu Chatbot 🔗 | *Python, JavaScript, HTML, CSS*   **June 2023**
- Developed a customizable customer service chatbot application with a user-friendly interface, allowing businesses to personalize chatbot tones, enable PDF file uploads, and create an engaging user experience.
- Utilized ChromaDB, OpenAI's ada-002 embedding model and GPT-3.5 completion model, and chunking to leverage vector database usage and semantic search with user query for precise and accurate results.

MoodPalette 🔗 | *Python, JavaScript, HTML, CSS*   **June 2023**
- Created an art therapy application that uses Meta's DeepFace facial recognition system to intelligently determine the user's mood from real-time images, dynamically changing the color palette and art prompt.
- Fully functioning art canvas, brush resize tool, save artwork option and photo capture/retake system.

Smart Farming Trailer 🔗 | *Python (Circuit Python)*   **January 2023 - May 2023**
- Lead software and electrical engineer on a project to create a fully functional smart farming trailer for rural Ugandan farmers to collect and process data through a model, and provide real-time farming suggestions.
- Developed code and circuits to run a GPS, an SD card, a soil moisture sensor, a DHT sensor, a photoresistor, an LCD display with button state navigation, and motors with joystick controls on a Raspberry Pi Pico.

Chattera 🔗 | *React.js, CSS, Firebase*   **August 2022 - September 2022**
- Created a real-time multi-user messaging platform with account creation through Google Accounts.
- Used React.js and CSS for the front-end components and design, while deployment was done via Firebase.

TECHNICAL SKILLS

Languages:	Python, C, Java, JavaScript, SQL, MATLAB, SystemVerilog, RISC-V/Assembly, HTML/CSS
Frameworks:	LangChain, Agile, Flask, React.js
Libraries/Tools:	OpenAI, Gradio, ROS, MAVLink, CAD, Matplotlib, Pandas, Pygame, NumPy
Interests:	PC-Building, Taekwondo, Music Production, Record Collecting, Studio Ghibli Films