ALI ABOELELA

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Education

University of Toronto	**Sep. 2019 – May 2024**
Bachelor of Applied Science in Computer Engineering	*Toronto, ON*

- UT Robotics Association (Autonomous Rover Team)

Work Experience

Alvia Systems	**May 2024 – August 2024**
Computer Vision Intern	*Toronto, ON*

- Building a pipeline to pre-process LiDAR-based point cloud data using Isaac ROS nodes.
- Output data is then used to train a classifier (fire detection) in PyTorch.

JCA Technologies	**September 2022 – August 2023**
Software Engineer	*Winnipeg, MB*

- Designed, developed, and tested ROS2 nodes. Nodes collect data from field operations & facilitate requests from a UI to command machinery following J1939 protocol using MQTT & REST.
- Setup pipelines using github and jenkins to automatically build installable debians for clients when code is pushed to streamline deployment process.
- Analyzed and debugged CAN logs to identify and resolve client issues.
- Collaborated with PM, team members, and occasionally client to identify requirements and assess feasibility and time-frames during sprint planning.

Reshift Media	**June 2021 – August 2021**
Software Developer Intern	*Toronto, ON*

- Worked mainly with firebase serverless functions & node.js. Worked on QA for new features.
- Wrote documentation to integrate HubSpot's CRM with existing middleware.

Projects

PDF-ChatBot (RAG)	*Python (Flask, LangChain, sklearn), Docker*	**September 2023 - April 2024**

- Built an AI powered PDF-reader using React, Flask, LangChain, & the GPT-3.5-turbo API. This was my capstone, and was funded by Select Equity so it was optimized for financial applications.
- The project addresses the problem of finding the best/most relevant "chunk(s)" of uploaded document(s) given a user query. Uses cosine similarity as a proxy for relevance.
- Setup a pipeline for cleaning/formatting the input documents (tables, text); Fine-tuned the LLM on a custom set of financial data.

Smart Garden	*Arduino, C, AWS*	**January 2024**

- Used an arduino, moisture sensors, a relay, and some water pumps to automatically water my plants when they get too dry.
- Moisture content is published to AWS IoT core which sends me a notification when moisture is low.

Text Conferencing App	*C*	**October 2021**

- Wrote a text conferencing app in C using TCP sockets. Users connect to a server by passing its IP address & the port number.
- Connected users can send messages and transfer files. File transfer was implemented using UDP sockets.

Geographic Information System	*C++*	**January 2021**

- Built a geographic information system using C++, making heavy use of the STL. Geographic information was collected using the OpenStreetsMap API.
- Graphics were rendered using the GTK library. Cities are represented primarily as graphs of streets and intersections.
- The GIS also provided pathfinding capabilities using Djkstra's Algorithm.

Skills Summary

Languages: Python, C++
Tooling & Infrastructure: Git, Linux, Docker, Jenkins, Atlassian suite
Robotics: ROS2
Web Development: Astro + Svelte, Flask, GCP (Cloud functions, firestore, auth)
Data Science: pSQL, PyTorch, Pandas, sklearn, sci-kit, matplotlib