Ali Aboelela

Toronto, Ontario / 647-450-2481
ali-aboelela.github.io ali.k.aboelela@gmail.com linkedin github

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*
- Built a pipeline to extract features from LiDAR-based point cloud data, later used to train a fire detection classifier 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*
- Backend development for a firebase app (serverless functions, firestore, auth).
- Documented and proposed how to integrate HubSpot's CRM with existing middleware.

Projects

LLM Based Financial Assistant (RAG) | *Python (Flask, LangChain, sklearn), Docker* **September 2023 - April 2024**
- In a team of 3, built a financial chatbot that supports PDF upload using React, Flask, LangChain, & the GPT-3.5-turbo API. Funded by, and optimized for Select Equity.
- The project addresses the problem of finding the best/most relevant "chunk(s)" of uploaded document(s) given a user query. Uses a greedy approach, with cosine similarity of vector embeddings as a proxy for relevance.
- Setup a pipeline for scraping, cleaning, and formatting the input data (tables, text); Fine-tuned the LLM on a custom set of financial data (common financial statements, news articles from financial magazines).

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, and implements a solution for the "travelling salesman" problem.

Skills

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