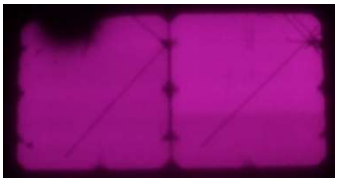
Design Teams

Blue Sky Solar Racing Team – *Array and Electromechanical Sub-Teams* *Oct 2021- July 2022*



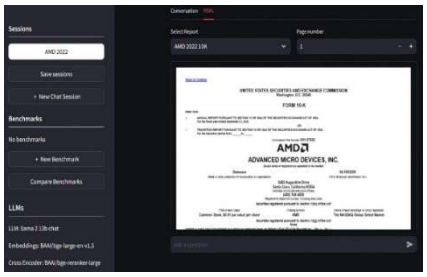
***Array*: Light curve tracing, Electroluminescent image rating algorithm** (Python). Designed a Python script to analyze and compare the brightness of solar cells. Images of solar cell electroluminescence were analyzed using the Python Image Library and run & tested in Visual Studio Code. The analysis allowed optimize placement of solar cells on a solar car such that the car receives a maximum power input.

Collaborative Experience

Team Leader, *LLM Agent For Shareholder Report Generation*, Capstone Project U of T *Sept 2023 – April 2024*

"A Large Language Model Agent for quick & efficient analysis of shareholder reports"

Source Code Demo Video

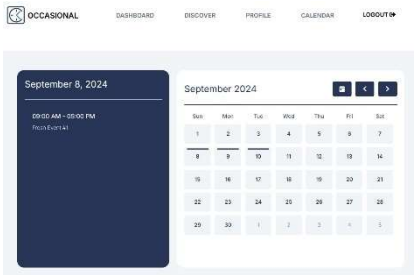


- **Collaborated** with a team of 4 to produce an application that utilizes LLMs (both OSS and API Inference) to chat with shareholder reports.
- **Concluded** that no prompting strategy dominates over any other and each has its own use case. The Re-Ranker retrieval strategy performs almost identically to OpenAI's ADA Embeddings Model©
- Underwent rigorous **Testing** of the LLM Agent accuracy through the comparison of human-generated responses with those of the LLM Agent under different prompting and retrieval strategies.
- **Innovated** current state-of-the-art prompting strategies with our very own Multi-Stage Prompting.
- **Researched** the Natural Language Processing pipeline and incorporated workflow into application.
- **Prepared** meetings by organizing an agenda beforehand, and completed each task for the meetings
- **Coordinated** meetings by following pre-planned agenda, ensuring the participation of all team members, and initiating discussions, through the inquiry of team members' work status

Team Leader, *Occasional (Web Application)*, Software Engineering U of T *Fall 2023*

"Web Application for UofT Event discovery"

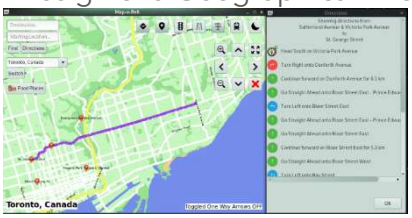
Source Code Demo Video Website



- **Collaborated** with a team of 6 to produce a responsive web app using Python Flask and MongoDB.
- **Performed** Unit, Performance, Regression, and End-To-End Tests to benchmark the application
- Design was **determined** through structured brainstorming and creating wireframes in Figma
- **Researched** UI/UX design principles and incorporated them into app.
- **Administered** MongoDB Cloud Database for data persistency.
- Implemented web **Security** via Bcrypt for password hashing.

Team Leader, *Geographical Information System*, Software Communication & Design U of T *Winter 2022*

"Design of a Geographical Information System"



Collaborated in a team of 3 to build a geographical information system in C++. Open Street Maps was used for data retrieval. Front- End was built using GTK & EZGL graphics libraries. Application was run under Linux OS and run & tested in Visual Studio Code and Netbeans. Valgrind was used for memory checking. Path finding algorithm done using Dijkstra's and A*.

- **Designed** the architecture of the system to use the Model View Controller Design Pattern
- **Coordinated** team meetings and **delegated** tasks to team members.
- **Led** the building of the Front-End user interface using EZGL & GTK graphics libraries
- **Researched** design choices made in user interfaces to be user-friendly and responsive. Research sources include Jakob Nielson's *Usability Engineering* book, and an article by Seo, Daeil, Yoo, Byounghyun, and Ko, Heedong on Levels of Detail Modeling from the *International journal of geographical information science*