Omar Farag

www.omarfarag.ca
Github: github.com/MrBoogle

Email : omarfarag74@gmail.com
Mobile : +1-647-700-7342
LinkedIn: linkedin.com/in/omar-h-farag/

Education

- **2nd Year, University of Toronto** — Toronto, ON
  Bachelor of Applied Science - Computer and Electrical Engineering — *Sep. 2019 – Present*

Skills

- **Languages**: C++, C, C#, Python, Javascript, Verilog, ARM Assembly, HTML, CSS
- **Technologies**: Git, MATLAB, Quartus Prime, Valgrind, Blender 3D, Photoshop, After Effects, Premiere Pro

Non-Paid Work Experience

- **VIA Rail Website Redesign**: Worked for a client (Left Turn Right Turn) on redesigning the VIA Rail website for accessibility.
- **Flood Barriers**: Worked with a team to design flood barriers for the Toronto Islands using fluid based physics simulations and Blender 3D.

Projects

- **ComeNGo GIS**: A GIS that provides commuters with a graphical map using C++ and OSM API
  - **Data Processing**: Processed large amounts of raw data (information on intersections, streets, points of interest) to find relevant cartographic info (distance, world coordinates, etc)
  - **GUI**: Used processed data to create a graphical user interface. Interface draws whole cities with streets, buildings, points of interest, and public transport routes. Allows users to find public transport routes between 2 points.
- **MoodLights**: A winning project at MakeUofT 2021. Utilizes C++, Python, Arduino UNO, and Rasberry Pi
  - **Data Retrieval & Processing**: Used Python Requests, AdafruitIO, and IFTTT to retrieve weather data using custom Google Home commands. The Rasberry Pi processed the data and sent commands to an Arduino UNO via a serial interface.
  - **LED Lamp Animations**: Arduino UNO received processed data from the Rasberry Pi and displayed beautiful animations depending on the selected mode. Weather mode displays animations based on real-time weather data, ambient mode displays calming animations. Also displays Google Calendar notifications as an animation.
- **Othello Game and AI**: Utilizes C to create the Othello board game and uses an altered version of the minimax algorithm for singleplayer AI
  - **Game States & Moves**: Used many different types of data structures to store game data. Used recursion to calculate game states and legal moves.
  - **Single Player AI**: Used the minimax algorithm to traverse a tree-like structure consisting of all possible moves. The program chooses the best possible move based on a set of heuristic measures. Used alpha-beta pruning to eliminate non-winning branches quicker, which allowed the program to traverse to a deeper depth and win the game more often.
- **2D & 3D Video Games**: Used C# and Unity to create video games
  - **3D Brawler**: A 3D Brawler where different characters have different move sets. Models created from scratch using Blender 3D. Game mechanics were created using physics, raycasts, collision detection systems, etc
  - **2D Platformer**: A 2D platformer that allows characters to jump, double jump, scale walls, etc. Created a physics-based camera from scratch to smoothly follow the character.

Awards

- **Smartest "Unsmart" Hack**: Awarded for creating the smartest hack that doesn't involve machine learning or any advanced learning frameworks at Canada's Largest Makeathon (MakeUofT). See Projects → MoodLights.
- **Valedictorian**: Awarded for excellence in academics and extracurriculars.
- **Nominated as Schulich Leader of the Year**: Nominated by my school to receive a $100k scholarship for excellence in STEM areas of study.