Joshua S. Varga

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Education

Wilfrid Laurier University — **Waterloo, Ontario**
BSc (Honours) Computer Science, Big Data Systems Concentration, Mathematics Minor — *Jun 2022*

Skills

Bold if proficient, otherwise familiar

- ARM assembly language, BASH/Shell, C/C++, HTML/CSS, Java, JavaScript (D3.js, Three.js), **Python** (Anaconda, TKinter), R, SQL, VBA
- Android Studio, Eclipse, **Git**, Hadoop, Apache Hive, Apache Pig, Maple, MySQL, RStudio, Visual Studio, **Visual Studio Code**

Projects

Umbrellabot

- A Discord bot for my personal server of over 30 active members that simplifies scheduling and inviting people to play games using **Python** and the **Pycord** API.
- The **Beautiful Soup** and **Requests** Python libraries are used in a webscraper that finds game cover art to populate Discord embedded messages.
- Used **YAML** to define a workflow that uses GitHub Actions to build and deploy the bot as a **Heroku** app.
- Utilizes new Discord features such as threads, scheduled events, application commands, cogs, and the bot ui kit.

Cellular Automata

- Simulates any two-state, Moore neighbourhood cellular automaton input in the form of B/S notation in **C++**.
- Graphics are handled by the **Simple and Fast Multimedia Library (SFML)** which is used to implement the ability to zoom, pan, and change the simulation speed.
- While paused, users can use the mouse to change the state of cells allowing for unique interactions with the simulation.

3D Showroom

- University project built using **JavaScript** and the **Three.js** library for learning lighting in computer graphics.
- Users can select one of three 3D models and observe how they are rendered under different lighting conditions.
- Implemented lights that come from 6 different directions, can be toggled on/off, and have their colours changed.
- To better observe the lightning effects, the model can be rotated along all axes and the camera can pan/zoom.

Covid Data Visualizer

- University project built using **JavaScript** and the **D3.js** library to visualize different covid metrics using a choropleth map.
- The map is drawn using GeoJSON data and coloured using data from a Kaggle dataset.
- Created a menu for changing metrics and colour schemes using **lil-gui**.
- Used transitions to interpolate changes to the DOM for easier differentiation between metrics and color schemes.

Smart Rockets

- Small application built with **C++** and **SFML** to observe the learning process of genetic algorithms.
- The rockets must learn to navigate around a static obstacle to hit a target and are assigned a fitness score based on how close they are to the target and how fast they get there without a collision.
- Users can alter the population size as well as chromosome size and mutation rate to observe changes in learning speed and accuracy.

Snake

- Used the **SFML** library to recreate the classic game of snake in **C++**.