

Visual Epidemic Simulation

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1 Abstract

This project intends to create a visual simulation of an epidemic. Using publically available data from the COVID-19 epidemic, the simulation will represent the data in a visual format similar to a dashboard. The simulation will be created using a Dockerised Java environment, with the simulation itself being written in Java.

2 Introduction

3 Problem Domain

3.1 Minimum Viable Product

I have identified the minimal requirements for this project to be successful.

1. Front end
 - (a) The front end must show a map of the Earth.
 - (b) The map will render polygon and country data.
 - (c) The front end must show a timeline of the epidemic.
 - (d) The individual countries must be clickable.
 - (e) Clicking a country will show the number of cases and deaths per week.
 - (f) The user must be able to scrub through the timeline.
 - (g) The user must be able to select data from a CSV file to be displayed.
2. Back end
 - (a) The back end will be using a node.js server.
 - (b) The epidemic data will be stored in a csv file.
 - (c) The polygon data will be stored in a GeoJSON file.
 - (d) The node.js server will be dockerised.

3.2 Stretch Goals

For this project, the following requirements have been identified:

1. The application must be able to input premade epidemic data.
 - (a) The data will be in the form of a CSV file.
 - (b) The data will contain the country, date, number of cases, number of deaths per week.
 - (c) The data will be publically available from the COVID-19 epidemic.
2. The application must be able to display the data in a visual format.
 - (a) The data will be displayed in a dashboard format.
 - (b) The map of the Earth will use mapping data from GeoJSON.
 - (c) The user will be able to scrub through the data to see the progression of the epidemic.
 - (d) The user will be able to click each country for a more detailed view.
 - (e) The user will be able to see the number of cases and deaths per week.

4 Methodology

Waterfall

5 Technical Solution

6 Results and Analysis

7 Conclusion