**Progress Report**

**- Increment 1 -**

**Group # Germ Theory**

# Team Members

Adam Pelah – ap17h – adampelah. Hector Rizo – hmr17c – tripplerizz. Andrew Koelsch – apjk16d

1. **Project Title and Description**

Game of Life – A semi-realistic automata / simulator of the effect of a virus on a population over time. People are represented by a ‘cell’, and cells are placed in a grid, with each grid space allowing one cell. Basic rules govern whether each cell will survive onto the next generation (each iteration). These rules revolve around a cell’s interaction with its neighbors, such as number of neighbors, proximity to an virus-infected cell, as well as non-neighbor factors such as age and time infected.

1. **Accomplishments and overall project status during this increment**

In this increment, we fleshed out the design for the project and also implemented the basic structure. Namely, we constructed the cell class and board class, and declared all the base functions we would need to get the project running in a basic way. On top of this, we began to fill out and think about some of the more complicated functions, such as the death rate function, which is a catch all function that determines if a cell will die without accounting for proximity to other cells, i.e. just on its own. I do not think we have overestimated or underestimated compared to our original plan, but then again, we have not started implementing some of the less biologically related functions such as the web scraping for real data, which the jury is still out on. Even so, we have laid a good foundation for building some strong momentum for the next iteration, and we continue to refine the program and discuss our decision for the many different paths forward.

1. **Challenges, changes in the plan and scope of the project and things that went wrong during this increment**

Possibly the main challenge was deciding what approach to take in this entire project. Some team members wanted a more functional programming concept, with cells being represented by homogenous data (i.e. just numbers), while others wanted a more object-oriented result. We decided to go with the object-oriented way, although we will maintain a small functional-programming version on the side in case we need to revert on it. Deciding on the various factors for non-proximity death was another main challenge, and we are still trying to model a proper function in order to implement this, as well as continuing to refine the rules for interactions between cells. A cell move function was proposed, and we have a very basic implementation of it, but it has proven to be a difficult one to discuss, due to the various complexities of shifting an entire grid as each cell moves around on it. Tying all these interactions and functions together has been challenging, but we believe we have a clear path forward for how these functions will interact with each other.

1. **Team Member Contribution for this increment**

*Please list each individual member and their contributions to* ***each of the deliverables in this increment*** *(be as detailed as possible). In other words, describe the contribution of each team member to:*

* 1. Hector and Adam contributed to the progress report, with Hector contributing most to this section and the title section, and Adam contributing most to the accomplishments and challenges sections.
  2. Hector did the two diagram sections for the RD report, while Adam wrote the rest of the sections.
  3. Adam wrote the first two sections of the IT report, whereas Hector wrote the last three.
  4. Hector laid down the structure for the classes (such as declaration of variables and file compatibilities), as well as the driver program, while Adam worked on the necessary getter functions, as well as implementing a basic version of the death rate program and exploring ways for move to work.
  5. Hector and Adam jointly worked on the video presentation.

1. **Plans for the next increment**

*If this report if for the first or second increment, describe what are you planning to achieve in the next increment.*

First priority is to implement a healthier visualization for the grid. Implement movement mechanics and cell interactions. Auto populate the gameboard with healthy and infected cells based on user input. Have a proper death rate function.

1. **Link to video**

<https://youtu.be/lID9C2saebk>