Course: COMS 4901 Projects in Computer Science
Project Name: Going Viral
People:

- **Student (me):** Ahmed Alzubairi
- **Professor:** Gail E. Kaiser
- **BioBus Faculty Point of Contact:** Robert Frawley (rob@BioBus.org)
- **Misc:** Zarina Akbary
    - Note: Robert wanted me to work with her on the project. She doesn't have much engineering experience as she studies biology. I am expected to do pretty much most to all the engineering part of the project. I wanted to bring her up because there is a chance she might help with the project as well.

Programming Languages: JS for front end, and Python for backend for the model and control part of MVC.
Platform: Web, so I guess any of Windows, Mac, or Linux since we are doing this on a browser and you can use a browser with any OS.
Github: https://github.com/AhmedAlzubairi1/GoingViral

Progress:
When I first started this project, I didn't fully understand Rob's vision of what he wanted this project to be. In our initially meeting, we talked how he and BioBus wanted to demo the card game in an expo and it would be really great if they have a physical card game as well as an online copy to demo in the expo to get more funding through grants and to further spread the reach of the game to students. To learn more about the game, Rob played the game with me in a virtual environment so that I can understand how the game should be best conveyed to the audience.

In my initial midterm report, Rob had one thing in mind. He wanted me to try to complete a working MVP that demonstrates the functionality of the game. That was my focus up until this point. My midterm progress is that I have completed a functional working MVP of the game Rob envisioned, which had an online design inspired by me. My plan for this project is that I will focus on completing an MVP by around mid March, and spend the remainder of the semester working on improving the game's esthetics and adding documentation and production tools such as a style checker, bug finder, code coverage, and unit testing. Since the game is complete, I hope that Zarina will be able to work more on improving the esthetics side of the game since she is heavily involved in the design of the game before I joined Rob in his endevor in making an online version of the game. I also would want to deploy this game into heroku after I complete the goals previously mentioned. It would be nice for BioBus to demo this game online rather than by running a python script locally for demo purposes to further improve the odds of receiving grants to fund the game's development.

In its current state, the game starts off with player 1 being the Flu virus trying to beat the Ebola virus. The way the flu virus beats ebola is by passing stage 5 first. You start the game by clicking draw. If you draw an immediate card (indicated by green '!' signs), you must play it. You play a card by first clicking the play card button and then clicking the card you want to play. If

you get enough ATP points to reach the next stage, you can click the Advance Stage button to go to the next stage. Once you finish your turn, you can click end turn to have player 2 go. The first one to get enough ATP points to pass stage 5 wins the game. To restart the game, simply refresh the screen. It reloads a new game whenever someone goes to the link, thus a simple refresh acts as a new game button.

Progress Since Midterm report:

When I had a deployed app during the midterm report, there were a lot of missing components in my project. For starters, it could only run locally instead of being deployed on a website. The project was also not thoroughly tested for bugs or issues. I also didn't have any features for the repo as a whole such as continuous integration, unit testing, code coverage, linting/style checker, or an automated bug finder. I wanted to implement all this as well as have through documentation for the project for future developers in BioBus to look at.

To start things off, I wanted to use a style checker and automated bug finder first for my backend code. Since I was using python, I used flake8 and flake8-bugbear respectively. This allowed my python code to be consistent and less prone to bugs or errors as I continue development.

After I got that out of the way, I used pytest and coverage to handle the unit testing and coverage reports on my backend. This took a lot of time because I noticed that there were a lot of errors when I started to test my code. After I got that out of the way, I started to work on the documentation syntax of my code. Unlike my previous projects where I used comments as documentation, I wanted to do things more modern. As a result, I used readthedocs.io to host the documentation of my code. You can view this website through the badge on my github repo.

After I had the more local stuff out of the way, I began to set up continuous integration to ensure my project is more maintainable for BioBus. I decided to use Travis-ci due to its easy of use. I explained to Rob how it worked and he understood how it worked and what continuous integration was. Now that I have all this stuff set up, I started to play around with the game locally to see how it worked. Everything seemed fine so I began the process of deploying the app to a live website. I used Heroku to do this. The game can be viewed by going to https://goingviralapp.herokuapp.com/ .

After I finished the deployment, I began to work with the BioBus team more in having time slots where we would play test the game as a whole. This was a very great idea because playtesting showed me all the other bugs that I didn't spot when I was playing the game locally instead of via heroku. As a result from playtesting, the game became much more robust and complete. To finish the project, I modified the readme to be much more detailed and polished to the point where Rob or any other members of the BioBus team would be able to understand how to use the project without having an extensive software background. After completion, I was working with other members of the BioBus team to update the artwork design of the cards.

At this point, I completed the project and it exceeded Rob's expectations. The BioBus team liked the project and he is planning (and already is) to get grant money to fund the expansion of the game. A great recent development that Rob told me was that the Sabin Institute was very interested in the game and wanted to help with sponsoring, distribution, and promoting the game through their channels and website. There is also talk of mentioning the game in a research paper discussing education game research with an emphasis on how such games can increase the access of information about vaccines and viruses to the general public.

For more details on the technical side of the project, please see the readme on the repo that talks about it more with instructions.