Aidan Henderson and Jonathan Knittel LM#9 Daily Log Dates Below

In Class:
Day 1 4/12/22 9:13-9:54
Aidan and Jonathan
Aidan and Jonathan searched for a code editor and compiler that they would be able to work on at the same time instead of having to work separately and share their code over google docs. This will hopefully help them save time while working on the project.

Day 2 4/13/22 9:13-9:54
Aidan and Jonathan
They both continued working on looking for a way to collaborate. They are sticking with google colab as an alum suggested that students start using it. Mr. Detrick also suggested that we could work parallel instead of completely together.

Day 3 4/20/22 9:13-9:54
Aidan and Jonathan
Jonathan continued watching the video and learned about the difference between Model Free and Model Based Reinforcement Learning. Model Free only takes into account the current state it is given, this is what we will be using, while Model Based RL tries to make predictions about the future states. Aidan also started to watch the video to start to learn how to create the AI/environment, and implement reinforcement learning.

Day 4 4/21/22 9:13-9:54
Aidan and Jonathan
Aidan continued to watch the video and began following along with the video. While following along with the video, Aidan noticed that the command needed to run the environment, env.render, does not work on Google Collab, so he decided to try switching to Jupyter Notebook. Jonathan continued working through the video and made it to about one hour in.

Day 5 4/22/22 9:13-9:54
Aidan and Jonathan
Jonathan continued working on transferring everything to VsCode and started working on the next section of the video. Aidan continued following along with the video.

Day 6 4/25/22 9:13-9:54
Aidan and Jonathan
Aidan continued to watch and follow along with the video.

Day 7 4/26/22 9:13-9:54
Aidan and Jonathan
Aidan tried to fix some bugs that he ran into while following the video.

Day 8 4/27/22 9:13-9:54
Aidan and Jonathan
Aidan tried to fix some bugs that he ran into while following the video. Jonathan worked on training the model he started over night more.

Day 9 4/28/22 9:13-9:54
Aidan and Jonathan
Jonathan worked on the breakout model more, he faced issues when trying to train more as it was now going very slowly. After trying to fix it by himself for a while, Aidan ask Jonathan for help fixing the issues that he was running into to which Jonathan recommended that Aidan switch the coding software he was using. After the switch the program started to work.

Day 10 4/29/22 9:13-9:54
Jonathan
Jonathan figured out why the training was going so slow, reloading a model to try and train does not work so well with the current settings. He is going to try and restart training with this new knowledge.

Day 11 5/2/22 9:13-9:54
Aidan and Jonathan
Aidan continued to follow the video after recording a video for the presentation. Jonathan started brainstorming and pseudo coding an idea to create a custom vector racing environment after playing it in physics class.

Day 12 5/3/22 9:13-9:54
Aidan and Jonathan
Aidan continued to follow the video and started working on the breakout AI.Jonathan continued working on the vector racing environment, he designed the action and observation spaces and the classes he will need to create the full game.

Day 13 5/4/22 9:13-9:54
Aidan and Jonathan
Aidan continued to follow the video and started working on the breakout AI. Aidan ran into a problem trying to use the Roms.rar file needed for the program. Jonathan started using a graphics library called pygame to try and render a grid that is supposed to represent graph paper.

Day 14 5/5/22 9:13-9:54
Aidan, Jonathan AP Testing
Aidan continued to follow the video and started working on the breakout AI. Aidan ran into a problem trying to use the Roms.rar file needed for the program.

Day 15 5/9/22 9:13-9:54
Aidan, Jonathan AP Testing
Aidan continued to follow the video.

Day 16 5/10/22 9:13-9:54
Aidan and Jonathan
Aidan tried to figure out a bug where he could not run the code due to missing files. Jonathan worked on making the grid code customizable and function with different sized windows.

Day 17 5/11/22 9:13-9:54
Aidan, Jonathan AP Testing
Aidan tried to figure out a bug where he could not run the code due to missing files.

Day 18 5/12/22 9:13-9:54
Aidan and Jonathan
Aidan decided to skip over that program as it was causing too many issues that Aidan could not fix. Jonathan added an array of dots that represent the intersection points of the grid lines and added some key inputs.

Day 19 5/13/22 9:13-9:54
Aidan, Jonathan AP Testing
Aidan started having the same problem with the racing car program as he had in the breakout program, so he decided to download the needed program again and realized that the reason why it was not working was because the program had a space in its name.

Day 20 5/16/22 9:13-9:54
Aidan
Aidan continued to follow the video and code the breakout AI. Aidan ran into a problem where the .render() function did not work. Jonathan got the key inputs to change the value of the correct dot in the array and draw lines using the mouse.

Day 21 5/17/22 9:13-9:54
Aidan
Aidan continued to follow the video to create the Breakout AI. Jonathan worked with saving the lines the user placed into a file and loading it later.

Day 22 5/18/22 9:13-9:54
Aidan
Aidan continued to follow the video to create the Breakout AI. Jonathan finished the file saving and loading functionality.

Day 23 5/19/22 9:13-9:54
Jonathan
Jonathan worked on creating a flood fill algorithm to fill the points inside of the track with values that will let the ai know where track and out of bounds are.

Day 24 5/20/22 9:13-9:54
Jonathan
Jonathan continued working on the flood fill algorithm but it was still very slow. He switched to using a library to copy the flood fill code that runs much faster. Tracks are now completely buildable.

Day 25 5/23/22 9:13-9:54
Aidan and Jonathan
Aidan continued to follow the video and started working on the racing car project. Jonathan started to make the game playable.

Day 26 5/24/22 9:13-9:54
Aidan and Jonathan
Aidan ran into a problem where he was not allowed to use the CarRacing environment. Jonathan ended up having the game playable but without the logic to prevent players from going through the side walls or off the screen. Once he has this done he can work on training an AI to race.

Jonathan At Home:
4/11/22
3:00pm to 4:00pm
Jonathan started watching a video and following along to the basics on reinforcement learning and how to use stable baselines and open ai gym. He watched and completed the first 40 minutes.

4/21/2022
5:00pm to 7:00pm
Jonathan switched all of the code over to normal python files and started using VScode instead. There is built-in tensorboard support in VS Code. Making everything run completely on the computer instead of a jupyter notebook or collab will make more difficult tasks a little easier down the road.

5/23/2022
6:00pm to 9pm:
Jonathan worked with different file types and methods of saving the game data. He end up using a pickle file as it has easy functionality with python. He was able to save a dictionary object inside of this file. He then found another library that handles opening the os save and open file windows. Some of the features don't load correctly yet but it shows promise.

5/23/2022
6:00pm to 9pm
Jonathan wanted to figure out the best way to complete a flood fill on his track. He experimented with different implementations of the algorithm. He tried using recursion but ran into problems with python's recursion limit. He also tried using a non recursive version of the algorithm but it was very slow. He even tried converting the track to an image so he could just use a photo editor to fill in the track.

Aidan at home:
4/22/22
4:00 - 6:30
Aidan downloaded Jupyter Notebook but had some trouble getting it to run. After a while of trying to get it to work he figured out that the website that he was following did not give him the correct instructions and figured out how to run it.

5/16/22
2:30 - 4:00
Aidan did some research to fix the error with env.render().

5/19/22
4:00 - 4:50
Aidan got the Breakout AI to be able to learn from its mistakes and get better at the game.

5/24/22
3:00-4:30
Aidan tried to figure out the issues he had with the CarRacing environment.

Resources:
Reinforcement Learning in 3 Hours | Full Course using Python - YouTube
https://github.com/openai/gym/issues
https://stackoverflow.com/
https://harmmade.com/vectorracer/