DeepClue

John Rutledge, Brian Gilmore, Zoe Romo,
Nayana Ravi, Harshitha Ambilpur, Tallon Coxe

Motivation

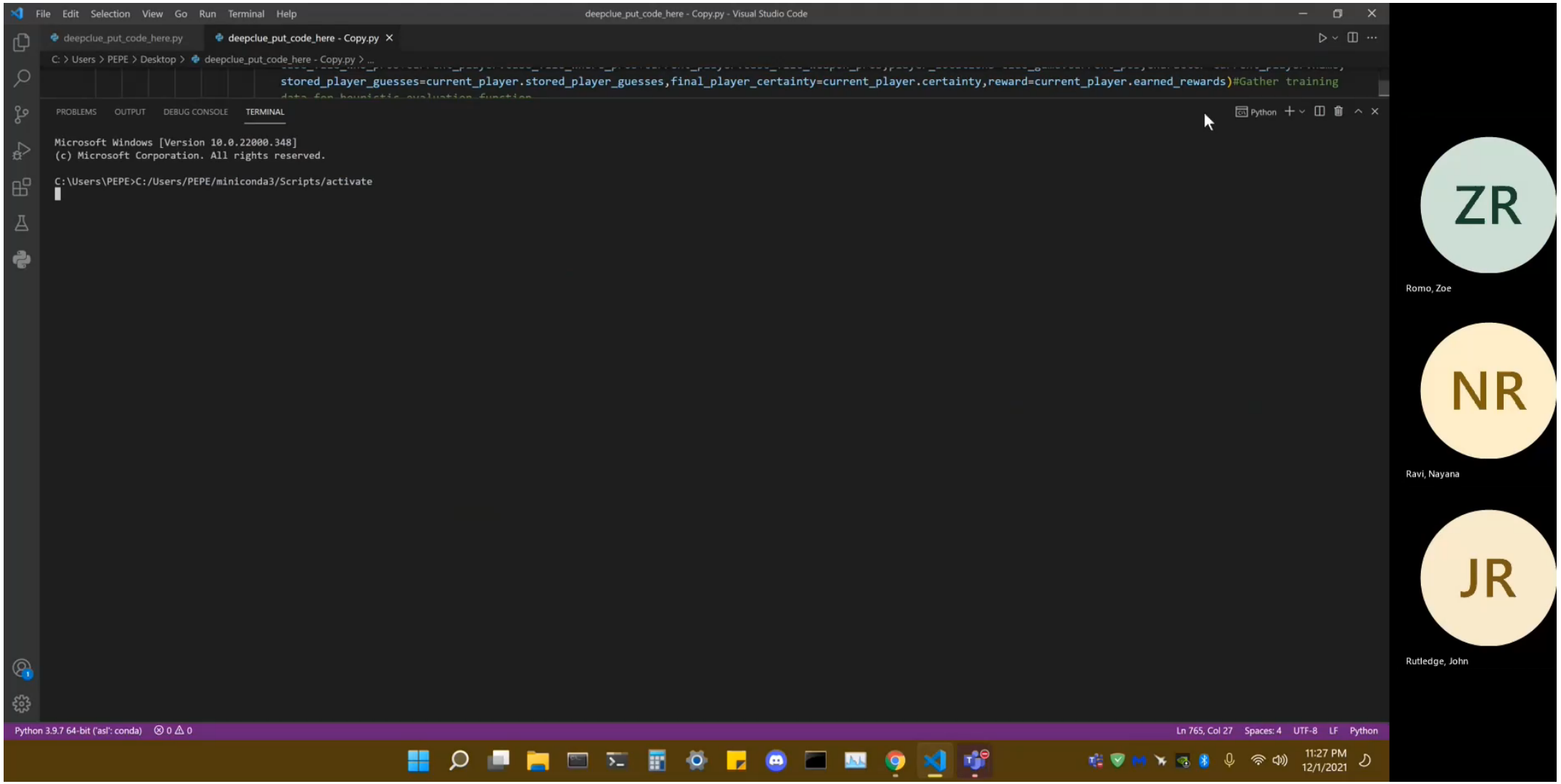
The motive for this project was to take a fun approach to creating an AI agent that could make its own decisions based on autonomous actions and reinforcement learning.

A popular murder mystery game, Clue® was chosen for our agent to compete in, against 5 other players.

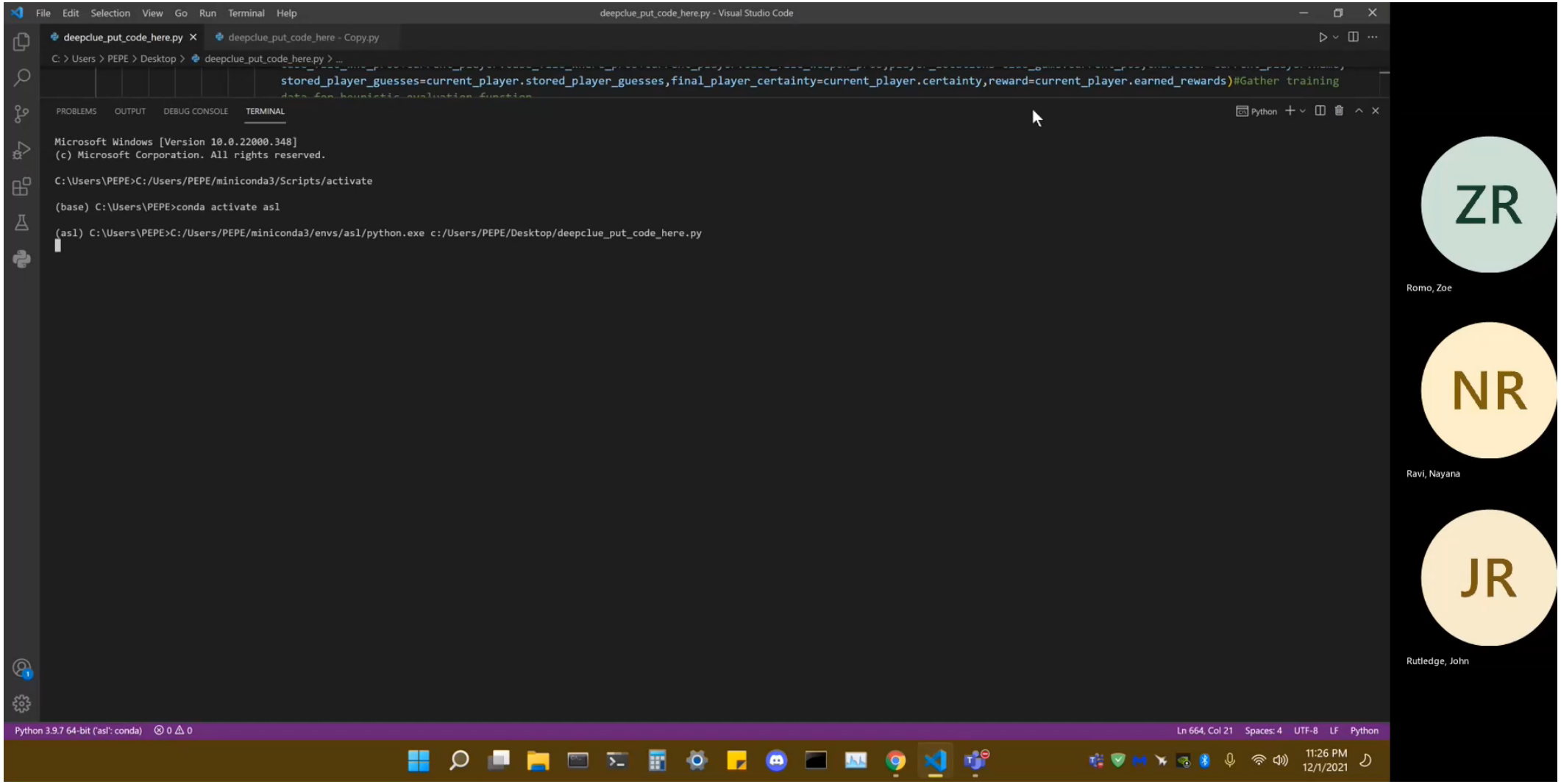
Interested in seeing how well the agent would perform in such a complex, strategic game.

Wanted to be able to play against the bot, and therefore would have a GUI implemented.

Demonstration



Demonstration



Basic functions created for game set up and actions (environment, card distribution, dice roll, navigation, suggesting, accusing, etc.)

Functions storing information on probabilities, previous guesses made by other players, etc.

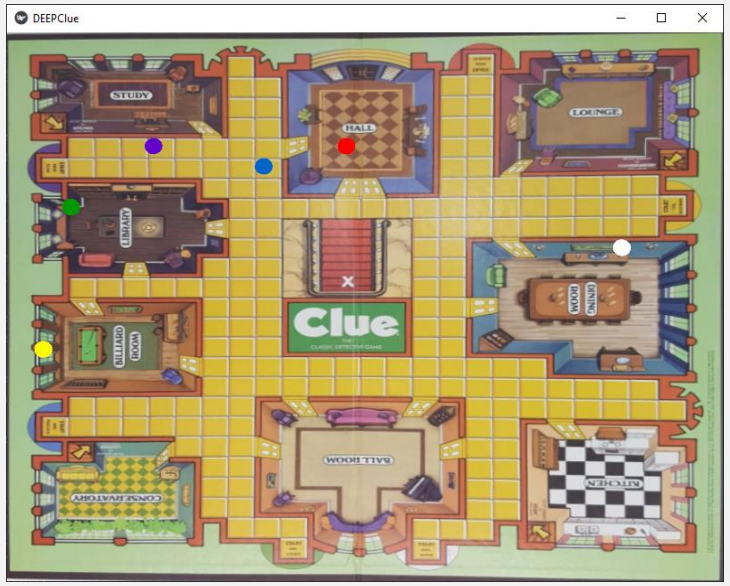
Functions were then inserted into classes, allowing each of the 6 players to perform and keep track of information equally and separately.

We implemented a neural network since the state space was too large for plain Q-learning. However, we were not able to get working results in our timeframe

Design

Initial game state

After one click



After two clicks

Design – Visual Gameplay

- Use Clue® board picture as background
- Colored circles represent players
- Move players based on grid coordinates
- Requires mouse click on board to get new sets of coordinates and update positions

Next

- Further enhancement of reinforcement learning and training.
- Add ability to play with/against deception.
- Interface GUI with game code