Project Description:

This term project is named "Fantasy Football Draft Practicer". The project will be a tool used to practice drafting players for

fantasy football while getting to choose between different types of AI opponents who have different strategies.

Competitive Analysis:

One similar project I've seen online is this tool from FantasyPros: https://draftwizard.fantasypros.com/football/mock-draft-simulator. This tool has a similar goal to this one, allowing the user to practice drafting players versus a chosen number of AI. This online tool also offers the user the option to customize some of the settings to their league's own. Some other similar projects I've seen are websites that allow multiple live players to do a 'mock draft'. They function the same as one with AI opponents, but instead each team manager is a real person, making the drafting experience feel more genuine.

The main differentiator between this project and the others is the focus on the AI's drafting strategy. Specifically, this tool offers(as of MVP) four different selectable strategies for the AI opponent(s) to use. This lets the user practice drafting in different scenarios and with more variation in choices. For example, one drafting algorithm makes the AI target the best value players available, irrespective of what players they actually need. Another drafting algorithm makes the AI target players of the positions that the user needs, making the AI more aggressive. Ultimately, this variety in strategies lets the user prepare for a number of outcomes in their actual draft.

Structural Plan:

This project is planned to be structured into four different files(as of MVP). The first is the web scraping file, which pulls data from https://www.pro-football-reference.com/ and uses some custom functions to parse the data and convert it to a csv. The second file moves the data from csv into a number of classes and subclasses to make it more easy to use and reference. The third file includes all the drafting algorithms to be offered to the user, broken up into individual functions and referencing the objects created in the second file. The fourth file will consist of the tkinter UI.

Algorithmic Plan:

The most complex part of this project is the minimax drafting algorithm. This algorithm will start by being designed in a 1 on 1 format, with one player trying to maximize their roster, and the other trying to minimize the other's roster. The way I am planning to approach this algorithm is by starting with a helper that suggests the best available players for the maximizing player's roster given their current roster. This will act as the 'possible moves' for the minimax tree, with the function recursively moving down the tree and eventually returning an evaluation of the roster of the maximizing player if we followed that path. Then, the minimizing player will try to choose the least evaluation, and then the maximizing player chooses the greatest remaining evaluation and so on. Eventually it should return bestMove for the user(maximizing player).

Timeline Plan:

As of writing this proposal, I've completed the webscraping, the OOP design, and 3/4 of my intended drafting algorithms. The main part of the project remaining is finishing the minimax algorithm and building the UI. I plan to spend the rest of today(11/29)and any available time tomorrow working on the minimax algorithm with the intention of finishing by the TP1 deadline. Afterwards, I plan to spend the rest of the week doing testing and building the UI to have MVP ready by TP2.

Version Control Plan:

I plan to use OneDrive to backup my code. I currently use it to backup most of my files and it autosaves them to the cloud. The image attached shows my files from the OneDrive website.

Graphical user interface, text, application

Description automatically generated

Module List:

This project uses Pandas, bs4, urllib.request, and numpy.

TP2 Update:

Added a player lookup feature to make the project more cohesive. Users can enter player names and see search results change dynamically while searching. After searching, players can click the player names to see their stats and use escape to return to the player lookup. Player lookup feels pretty good, going to keep improving the UI of the draft algorithms.

TP3 Update:

* Made custom pages for the tool.
* Added a grid display for all the rosters in the draft.
* Users can now back out of a draft with Escape and then run a new draft without closing the app.
* Added custom text entry boxes as opposed to getUserInput prompts. Much cleaner and easier to use.