

## Viswanath Chadalapaka Project Report ECS163

### System Overview

My System allows a user to navigate data from hundreds of chess games in an intuitive manner featuring not only a chess board, but also a Sankey diagram and a bar graph. The main point of my system is to allow the user to learn about the most popular moves made in a given position. The following image and succeeding description explain the benefits of the system.

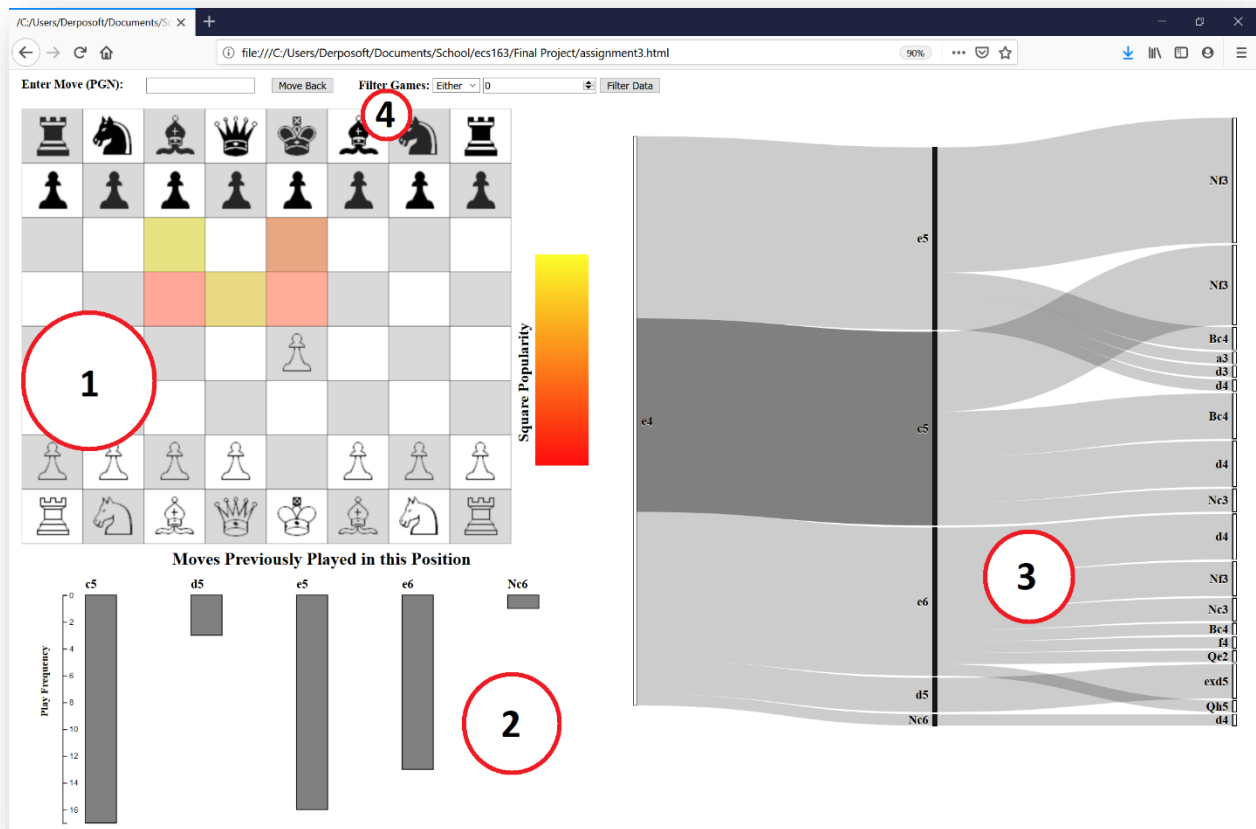
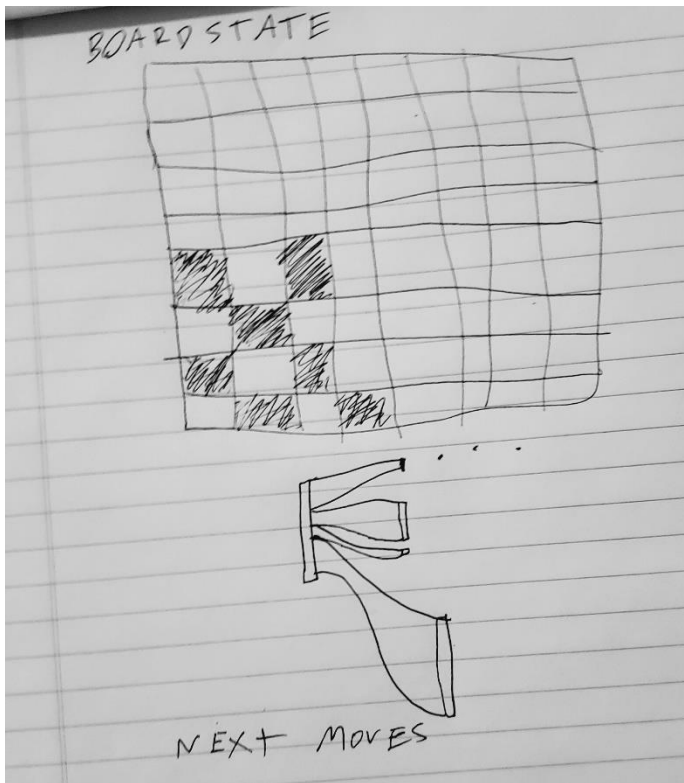


Fig 1. Labelled System Screenshot

1. **Chess Board.** Since chess is a game, naturally the easiest way to view the game state is by glancing at the chess board. Therefore, I have provided a chess board which updates when moves are entered. Furthermore, the board features a “heatmap” of next most popular moves. This allows a user to instantaneously see which moves are most popular in a position.
2. **Frequency Bar Chart.** Although the frequency is visually displayed qualitatively on the chess board, the bar graph is a helpful way for the viewer to understand exactly how many games were played in a certain way.

3. **Sankey Diagram.** The Sankey diagram is one of the most helpful visualizations of the system. At a glance, a user can see the way a large number of games were played out in an incredibly concise manner. The height of each node is representative of the number of games played. Furthermore, the coloring of the nodes is representative of whether or not the corresponding move was played by white or by black.
4. **Filters.** Although only two filters are given, they are very helpful to the user in numerous ways.  
**Who won?** The first filter allows the user to choose to view data for games won only by a certain side, or games drawn. This helps the user search for candidate moves for the side that they wish to play in a given position. **Minimum Rating.** The second filter allows the user to enter a minimum rating that both players in a game must be for that game to be considered. By introducing such a cutoff, the user can understand the level of gameplay involved in each move, and also allows them to only view moves made by higher-rated players.



### Some Considerations

The initial conception of the project was incredibly naïve (as seen to the left), and it was assumed that it would be simple to search through large databases of games. However, after the game count exceeds 1000, while the computational slowdown is linear, it becomes uncomfortable to the user to wait any longer. Therefore, I have capped the number of games being considered to the first 1000 of the Dataset.

### Dataset

I will use a dataset of 20k games from chess website Lichess to allow the user to interact with a chess board and Sankey diagram in an intuitive manner. The dataset is provided

free of charge on Kaggle at the following link: <https://www.kaggle.com/datasnaek/chess>.