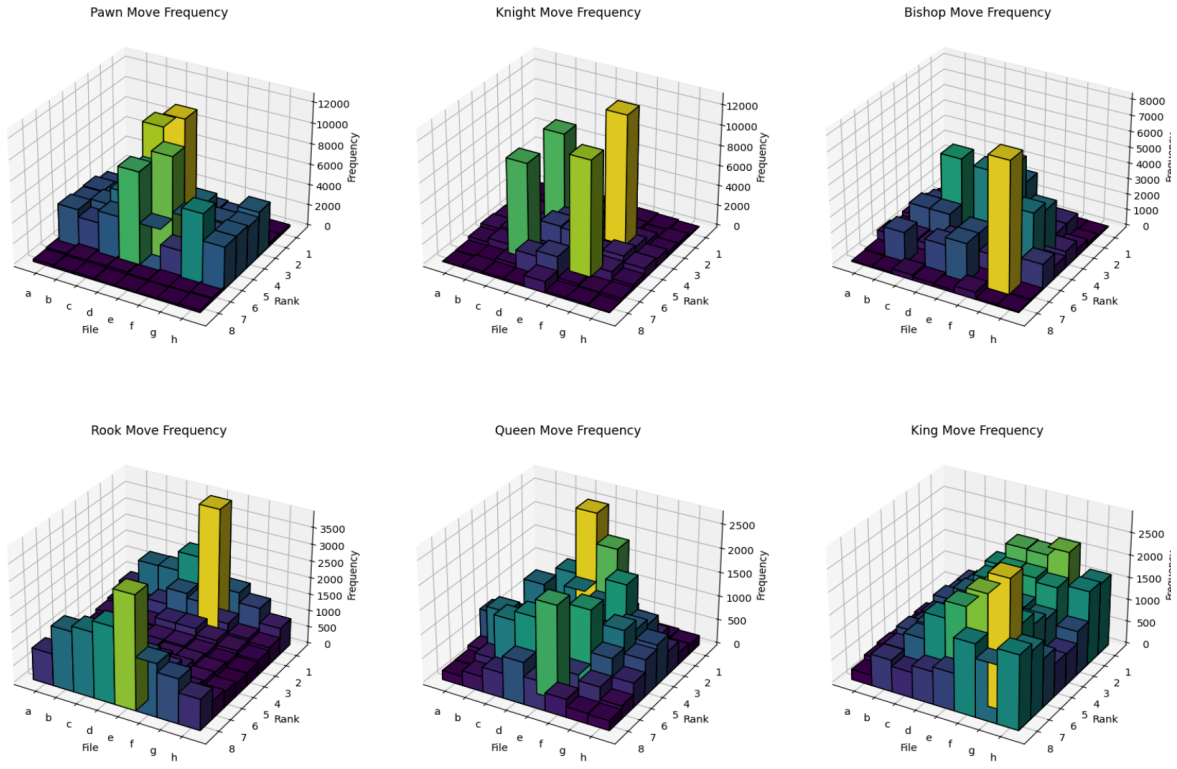
Marko Melishchuk's 10,000+ Chess Games



(Main Figure)

Legend Explanation:

- Vertical Bars ("All Games") – Represents the total number of games played against opponents in each rating range.
- Back.
- X-axis ("File") – Represents the file of the board, letters A-H, showing the horizontal position of the piece/s.
- Y-axis ("Rank") – Represents the rank of the board, numbers 1-8, showing the vertical position of the piece/s.
- Z-axis ("Frequency") - Illustrates the number of times I moved a piece to a certain square, also represented by color
- Grid Lines – Help visualize the squares to outline the moves more clearly across the board.
- As the color transforms from purple to blue to green to yellow, this represents the frequency of peace going to that perspective square going up.

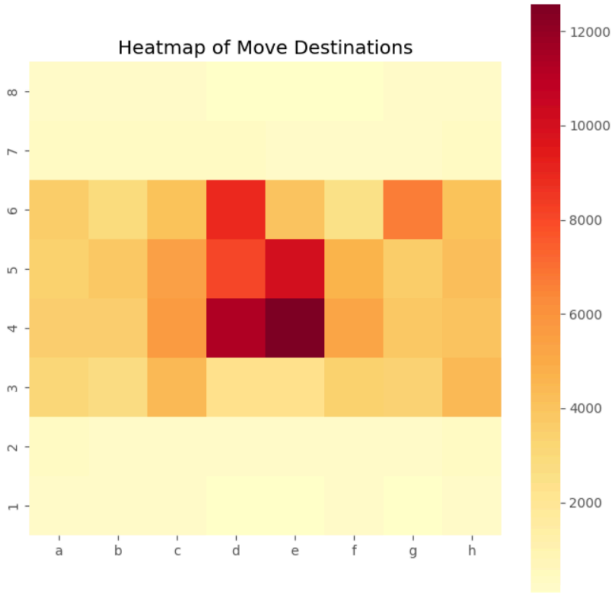
Text Introduction:

- I play chess for Pitt's national team and my best result was 5th place at the 2023 Collegiate Pan-American tournament. I also enjoy playing online and over the past 8 years I've played more than 10,000 games.
- With both the white pieces and the black pieces, I know that I play in a certain pattern as I play the same opening almost every time with each respective color. However, the opening of the game will only get you so far and I'm curious to see the progression of where my pieces go on the board over the course of the game and I've plotted this over the course of my entire online chess career.

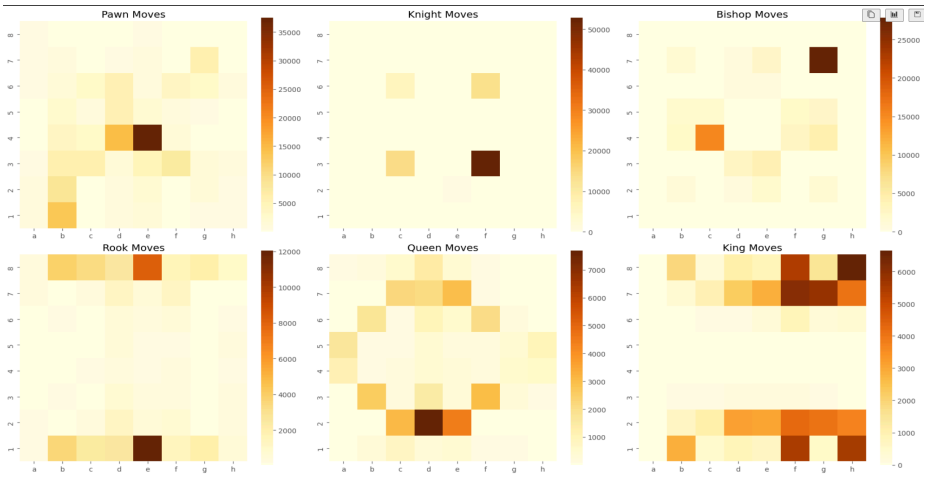
- A move in chess is denoted by a letter to represent a piece. For example Q for moving the queen then by the rank which is noted by a letter A – H and finally a number denoting the file 1–8. If I move my queen to the square F7 this is represented as Qf7.

Data and methodology:

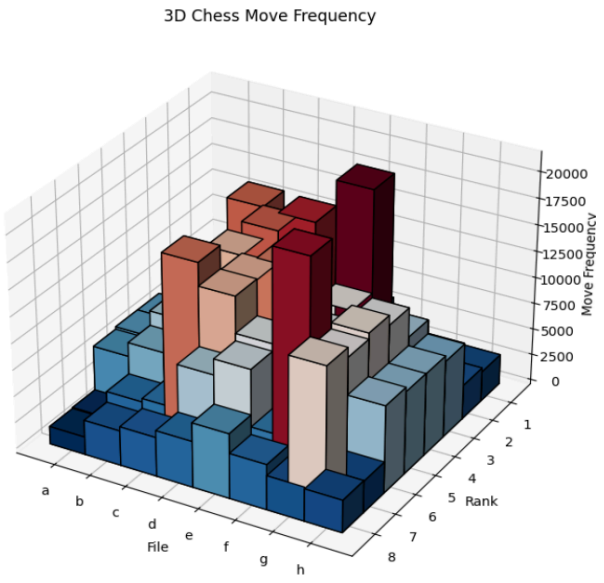
- I collected my data from chess.com API which contains all of my game data per month which vouched to over 60 CSV files. I put these 60+ CSVs into a panda's data frame and created a range one through eight to represent the letters of the board's rank, which are ABCDEFGH.
- To create these visualizations, I initially plotted all of the moves onto a 2-D board by creating a heat map that consists of 64 squares based on the rank and file of a trust board and then plotted each move onto the squares.



- After plotting all of my moves onto an initial heat map, I passed the moves into new heat maps for each respective piece, one heat map for pawns, one for bishops, one for knights, one for rooks, one for queens and one for kings.



- I didn't feel that this was enough to properly visualize the quantity so I transformed the graphs into 3-D visualizations, which I feel better visualize the frequency of these moves.



- Then once again I split the moves into six different graphs for each type of piece and created 3-D visualizations to create the main figure at the top (see top)

Findings: Through these patterns, I found that I play largely in the center of the board overall, but I have some very specific tendencies, particularly with moving my nights to only four squares on the board which are highlighted by columns that are tallest in green and yellow. With my roots, I tend to keep them on the back, rank with black that would be the eighth rank And with whites that would be the first rank and you can see that I keep them on center files, which would be D&E, which is generally a good fundamental practice. after looking at these graphs in depth and looking at the frequency, which with I move my pieces, I've noticed that I move my king more than I move my queen, which is not a good practice because the queen is the most powerful piece and the king is generally the weakest piece so I should likely not exchange my queen until much later in the game.

Significance statement:

- This is significant to me because it will allow me to better understand the patterns of my place tile, and I can now create a tool that allows me to visualize the patterns of opponents who are my strength and their place styles. I can also use this as a tool to make learning Chess more accessible, particularly in visualizing how much a certain piece is moved, and if somebody's play style falls in line with what is fundamentally good. I'm hoping to become both a better data scientist and Chess player through doing this project and I've polished my GitHub report so hopefully others can use my code as a base to help them visualize their common patterns which should hopefully improve their skill level.

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Links:

Github: https://github.com/OnlyMaeko/1520-Final-Project

API Links (change month and year): https://api.chess.com/pub/player/elitebarbs13/games/2017/09

Report: https://docs.google.com/document/d/1NS8evzKtwHJ4M7-vMdDfCN3bu0PHsshTeHvuA_I4c34/edit?tab=t.0