Problem Statement Worksheet (Hypothesis Formation)

How can a chess player quickly revise their strategies before their next chess game/tournament, by optimizing their moves to increase chances of victory, like making better opening moves based on being white or black, which naturally could lead to increased tournament rewards or overall satisfaction of the game.

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1 Context

Chess is one of the most popular games, and widely used to study and research AI implementations. While computers still have yet to be beaten by humans, human to human games are still of interest, and in many cases chess tournaments with monetary prizes are held. Thus, using data to find optimal strategies to winning in these kinds of settings has great value. More specifically, improving a players chance of victory and receiving monetary rewards, as well as overall player satisfaction when playing the game, are desired outcomes.

2 Criteria for success

Finding a relationship between certain moves, techniques, or strategies, and victory, will ultimately mean we are successful here. In particular, finding a feature that has a clear correlation with victory means success, as we could use that feature to then revise a players strategy.

3 Scope of solution space

The victory_status feature is the feature that we will be focusing on, since we are trying to optimize chances of victory. We will also focus on will be things like the player's color piece, opening move, and players ratings, as these intuitively should have the most impact on victory.

4 Constraints within solution space

- **Players don't always get to choose to play white or black, so it is important to note that predictions and optimal strategies for both colors must be made, not just one.**
- **There is not much information on how a player wine/loses, so if a prediction results in a common type of loss, like "mate", then this may be a flaw in such a strategy which would be hard to address with the current data.**

5 Stakeholders to provide key insight

The dataset comes from kaggle, so final predictions could be uploaded to kaggle to compare and contrast against other results. Potentially, results could also be given to chess players to try out as well.

6 Key data sources

The only dataset needed comes from kaggle:
https://www.kaggle.com/datasets/datasnaek/chess

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