CHEnalySiS

Chess Data Analysis

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Outline

1. Chess Introduction
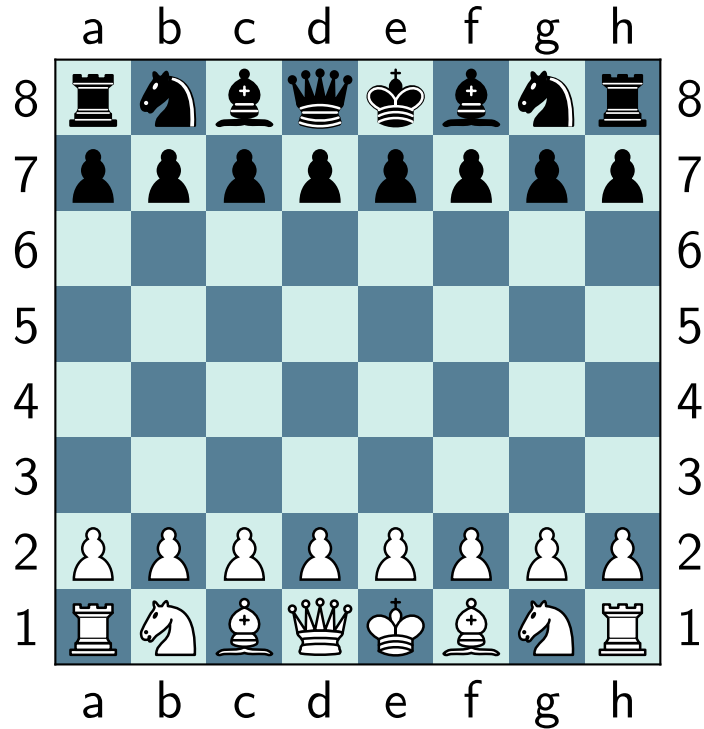
2. References

Outline

1.1 Chess Board

Figure 1: Basic Layout

- 8×8 squares

- Ranks (rows) numbered 1 to 8

- Files (columns) lettered a to h
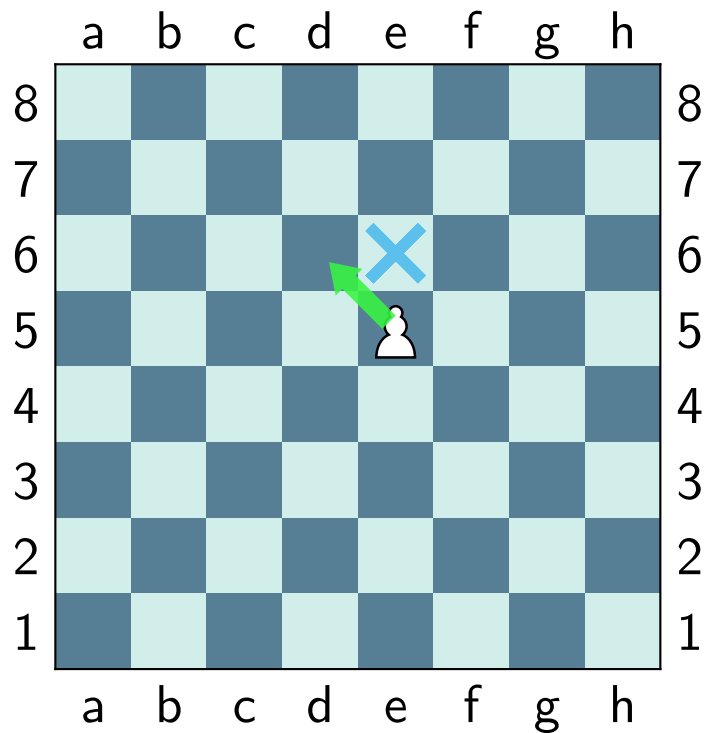
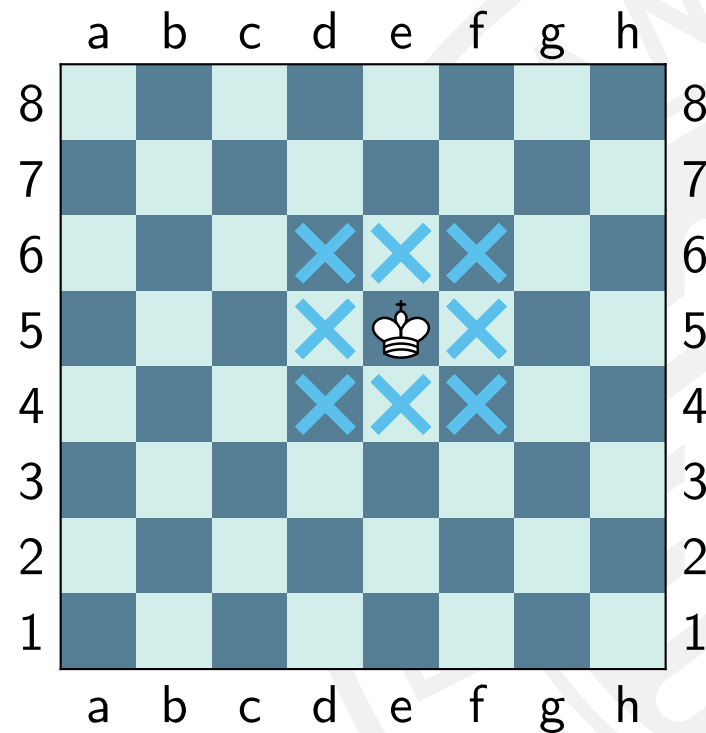- Initial Position

1.2 Chess Basic Moves

Figure 2: ♟ Pawn

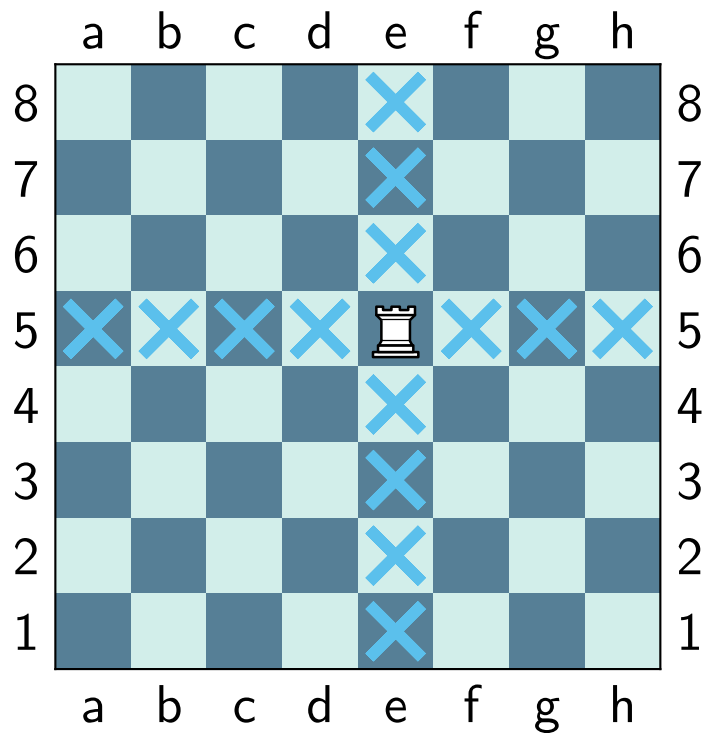
Figure 3: ♚ King

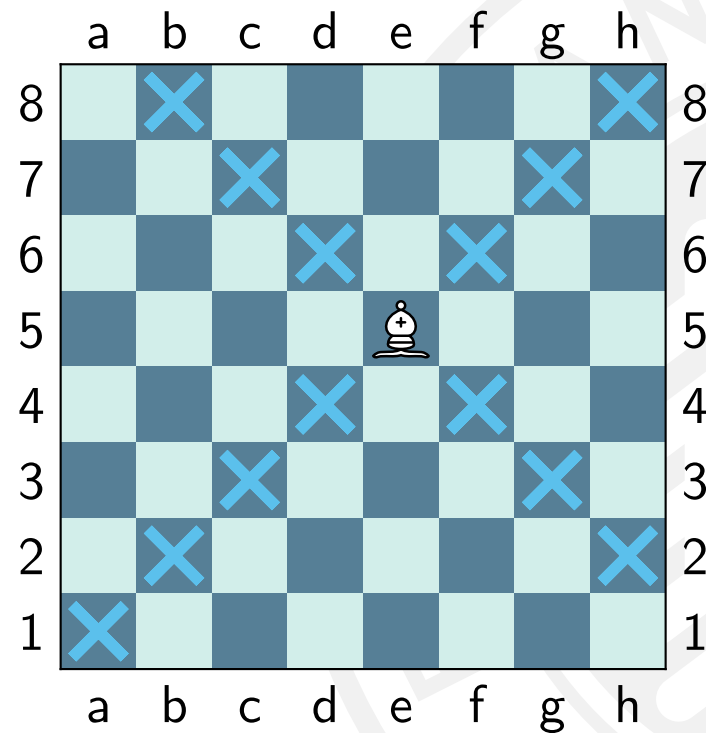# 1.2 Chess Basic Moves

Figure 4: ♖ Rook

Figure 5: ♗ Bishop
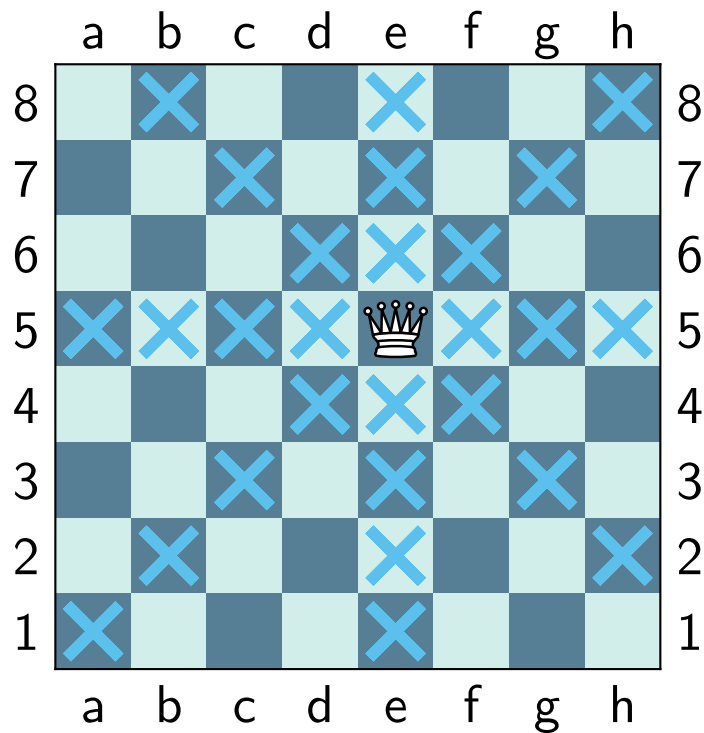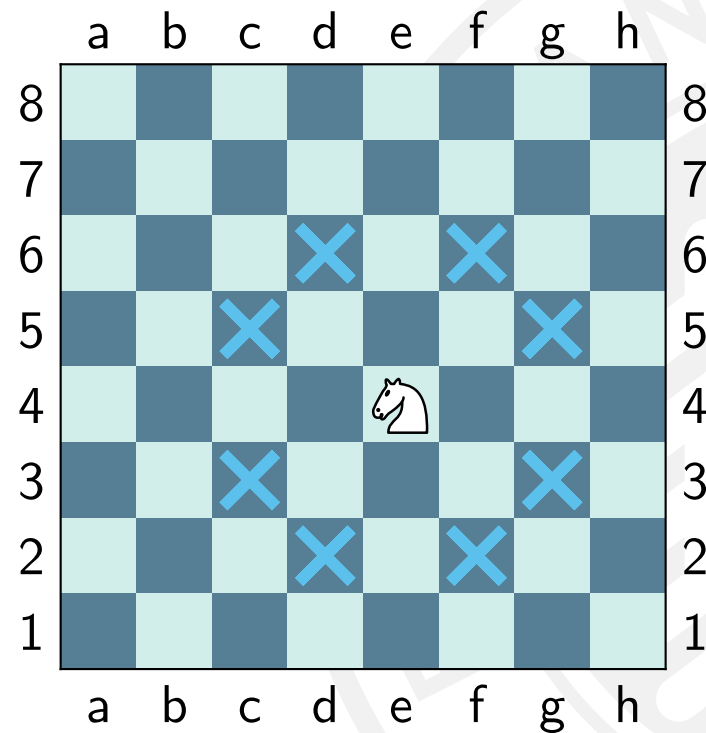
1.2 Chess Basic Moves

Figure 6: ♛ Queen

Figure 7: ♞ Knight

1.2 Chess Basic Moves

- **Castling** 王车易位

- **Promotion** 升变

- **En passant** 过路兵

1.3 Material Points

Piece	♟ Pawn	♞ Knight	♝ Bishop	♜ Rook	♛ Queen	♚ King
Material Points	1	3	3	5	9	∞

Table 1: Chess Standard Material Points System

Piece values exist because calculating to checkmate in most positions is beyond even top computers. Thus, players aim primarily to create a material advantage, which is helpful to quantitatively **approximate the strength of an army of pieces**.[1]

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[1]Chess piece relative value: https://en.wikipedia.org/wiki/Chess_piece_relative_value

1.4 Portable Game Notation (PGN)

Portable Game Notation (PGN) is a standard plain text format for recording chess games (both the moves and related data), which can be read by humans and is also supported by most chess software.[1]

pgn

```
1 [Event "rated rapid game"]
2 [Result "1-0"]
3 [WhiteElo "1025"]
4 [BlackElo "1079"]
5 [Variant "Standard"]
6 [TimeControl "900+10"]
7 [Opening "Four Knights Game: Italian Variation"]
8
9 1. e4 e5 2. Bc4 Nc6 3. Nf3 Nf6 4. Nc3 d5 5. exd5 Nd4 6. Nxe5 Bg4 1-0
```

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[1]Portable Game Notation: https://en.wikipedia.org/wiki/Portable_Game_Notation

Outline

1. Chess Introduction

2. References

2. References

(1) lichess.org Open Database：Chess open-source game database
(2) Disservin/chess-library PGN parsing library in C++
(3) nlohmann/json：JSON data parsing library in C++
(4) Chess piece relative value Wikipedia

Thanks for Listening!