AI Chess Master

Objective : Build a Vision AI which plays chess by looking at the board !

AI abilities :

- Take screenshot(s) of the position as input
- Properly identify the position
- Optional :
    - Predict the outcome of n possible move(s)
    - Play the next move

Datasets (optional) :

- Positions : https://www.kaggle.com/koryakinp/chess-positions
- Outcome : https://www.kaggle.com/datasnaek/chess

Deliverables :

- **Ordered notebook(s)** (.ipynb, html or pdf) :
    - Data exploration
    - Models training
    - Performance evaluation
- **Script (bonus / optional) :**
    - A quick application showing what your chess AI thinks / can do.
    - The demo is available on the web.

Note : For each skill, ⅔ of the points are for the explanations (markdown cells) and ⅓ of the points for the code.

Evaluation criterias (120 / 100 pts) :

Skill	Description	Points
Specialized libraries	Choice justification and usage.	5
Literature review	• State of the art is reviewed and used to justify the overall plan of the notebook. • The dataset(s) specificities are described and taken into account.	30
Data processing / augmentation	• Each transformation (noise removal, histogram equalization and so on) must be explained. This is also true in case no transformation or augmentation is applied. • The pre-processing of the data should be automatized.	15
Feature engineering	• The necessity of feature extraction is explained. • The algorithm is described and justified.	15
Dimensionality reduction	• The necessity of reducing dimensions is explained. • A brief algorithm description (and its parameters) is expected.	10
Modelization	• Several models are explained, justified, tested and compared. • Hyperparameters choice is optimized (if time wise possible) and explained.	15
Performances	• A baseline is defined. • The choice of the loss function, metrics and optimizer is clearly stated. • The performance of the data exploration choices are clearly compared and explained. • Graphs are readable (size, density etc.) and understandable (titles, legends etc.)	10
Demo (bonus)	• The AI’s position analysis is visible. • The AI's possible next move(s) are visible. • The AI’s game outcome prediction is seen as win %. • Application is available online.	20