Project Proposal:

EC5203 Machine Learning

Group Number: 70	
Name and Index Numbers of students	
Student 1: Name: Bandara P.M.T.G. Registration Number: EG/2022/4956 Student Email: eg244956@engug.ruh.ac.lk	**Student 2:** Name: Alahakoon T.T. Registration Number: EG/2022/4925 Student Email: eg244925@engug.ruh.ac.lk
Project Title: Predicting Optimal Chess Moves and Game Outcomes Using Classical Machine Learning	
Project Description: This project focuses on predicting optimal chess moves and game outcomes using classical machine learning algorithms. The Kaggle 'Chess Games' dataset is used as the foundation, containing historical chess match records in PGN format. Through the 'python-chess' library, these textual move sequences will be converted into numerical features such as material balance, mobility, move number, and turn status. The project aims to train and compare two supervised learning models Random Forest Classifier and Logistic Regression to predict the next likely move and the overall game result (win/loss/draw). The study also incorporates explainability analysis through feature importance visualization, highlighting which factors influence move prediction and victory probability. The project demonstrates the potential of classical ML techniques in strategic game modeling while maintaining interpretability and computational efficiency.	
Dataset Link: https://www.kaggle.com/datasets/arevel/chess-games	
Original Number of Features in the Dataset: Approximately 15 (engineered features extracted from game states)	
Target Variable: Best move played in the position (move notation), Game Outcome (Win, Lose, Draw)	
Type of Problem: Supervised – Classification	
Algorithms Selected:	
Algorithm 1: Random Forest Classifier	**Algorithm 2:** Logistic Regression