AI Project

Dataset: <https://www.kaggle.com/datasets/delayedkarma/fantasy-premier-league-20182019>

Problem Statement: Use optimization algorithms to come up with a team of football players with best stats and within a set budget and subject to some given constraints.

N=15 (11 starting players and 4 substitutes)

Let xi be the ith player where i: {0 < i < N}

Let Pi be the Points of the ith player

Let the budget B be 100m

Let Ci be the cost associated with the ith player

There should be 5 defender, 5 midfielders, 3 forwards and 2 goalkeepers.

Not including the same team constraint now, but for future use: Maximum 3 players from same team.

Objective:

Maximize:

Subject to:

Cost:

Xi (i.e., a player is selected or not)

∑Defenders Xi = 5

∑Midfielders Xi = 5

∑Goalkeepers Xi = 2

∑Attackers Xi = 3

We can use machine learning to predict the points from all the statistical features.

List of all features:

'Name', 'Team', 'Position', 'Cost', 'Creativity', 'Influence', 'Threat', 'ICT', 'Goals\_conceded',

’Goals\_scored', 'Assists', 'Own\_goals', 'Penalties\_missed', 'Penalties\_saved', 'Saves', 'Yellow\_cards',

'Red\_cards', 'TSB', 'Minutes', 'Bonus', 'Points'

Features relevant to Goalkeepers:

Team, Influence, Goals\_conceded, Penalties\_saved, Saves, Yellow\_cards, Red\_cards, TSB, Minutes, Bonus

Features relevant to Defenders:

Team, Influence, Goals\_conceded, Own\_goals, Yellow\_cards, Red\_cards, TSB, Minutes, Bonus

Features relevant to Midfielders:

Team, Creativity, Influence, Threat, ICT, Goal\_Scored Assists, Yellow\_cards, Red\_cards, TSB, Minutes, Bonus

Features relevant to Attackers:

Team, Influence, Threat, ICT, Goal\_Scored, Assists, Yellow\_cards, Red\_cards, TSB, Minutes, Bonus