

# IPL - Players Performance Predictor

August 7, 2023

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[3]: # Reading the players data which is stored in json
for i in open("players.json","r").read().split("\n"):
    print(i)

[
    {"Player": "Shubman Gill", "Mat": "GT", "Inns": 17, "NO": 17, "Runs": 890,
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12},
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"6s": 6},
  {"Player": "Phil Salt", "Mat": 9, "Inns": 9, "NO": 1, "Runs": 218, "HS": 87,
"Avg": 27.25, "BF": 133, "SR": 163.90, "100": 0, "50": 2, "4s": 24, "6s": 10},
  {"Player": "Rilee Rossouw", "Mat": 9, "Inns": 9, "NO": 2, "Runs": 209, "HS":
82, "Avg": 29.86, "BF": 141, "SR": 148.22, "100": 0, "50": 1, "4s": 17, "6s":
11}
]

```

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[1]: # IPL Players Performance Predictor

# Subtopic: Import Libraries
# Import necessary libraries for data manipulation and model building
import pandas as pd
import numpy as np
from sklearn.model_selection import train_test_split
from sklearn.preprocessing import StandardScaler
from sklearn.linear_model import LinearRegression
from sklearn.metrics import mean_squared_error
from tensorflow import keras
from tensorflow.keras import layers

# Subtopic: Load and Explore Data
# Load the performance data of IPL players and display a sample
data = pd.read_json('players.json')
print("Sample data:")
print(data.head())

# Subtopic: Data Preprocessing
# Select relevant features and target variable for prediction
features = ['SR', 'Avg', '4s', '6s', 'HS']
target = 'Runs'

# Split the data into features (X) and target variable (y)
X = data[features]
y = data[target]

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# Split the data into training and testing sets
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2,
    random_state=42)

# Standardize the features for better model performance
scaler = StandardScaler()
X_train_scaled = scaler.fit_transform(X_train)
X_test_scaled = scaler.transform(X_test)

# Subtopic: Train Linear Regression Model
# Train a linear regression model to predict player runs
linear_reg_model = LinearRegression()
linear_reg_model.fit(X_train_scaled, y_train)
y_pred_linear = linear_reg_model.predict(X_test_scaled)

# Calculate Mean Squared Error (MSE) to evaluate the model
mse_linear = mean_squared_error(y_test, y_pred_linear)
print("Mean Squared Error using Linear Regression:", mse_linear)

# Subtopic: Build Neural Network Model
# Build a neural network model using Keras for prediction
model = keras.Sequential([
    layers.Dense(64, activation='relu', input_shape=(X_train_scaled.shape[1],)),
    layers.Dense(1)
])

# Compile the model and train it using training data
model.compile(optimizer='adam', loss='mean_squared_error')
model.fit(X_train_scaled, y_train, epochs=100, batch_size=32, verbose=0)

# Evaluate the neural network model using test data
loss_nn = model.evaluate(X_test_scaled, y_test, verbose=0)
print("Mean Squared Error using Neural Network:", loss_nn)

# Subtopic: Make Predictions for Next Match
# Define performance metrics for the next match
next_match_data = np.array([[157.80, 59.33, 85, 33, 129]])

# Standardize the next match data using the same scaler
next_match_data_scaled = scaler.transform(next_match_data)

# Predict player runs for the next match using the neural network model
predicted_runs_nn = model.predict(next_match_data_scaled)
print("Predicted Runs for the Next Match using Neural Network:",
    predicted_runs_nn[0][0])

```

```
# Predict player runs for the next match using the linear regression model
predicted_runs_linear = linear_reg_model.predict(next_match_data_scaled)
print("Predicted Runs for the Next Match using Linear Regression:",
      predicted_runs_linear[0])
```

```
## Created by Abhineet Raj - https://github.com/abhineetraj1
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Sample data:

	Player	Mat	Inns	NO	Runs	HS	Avg	BF	SR	100	50	4s	\
0	Shubman Gill	GT	17	17	890	129	59.33	564	157.80	3	4	85	
1	Faf Du Plessis	14	14	1	730	84	56.15	475	153.68	0	8	60	
2	Devon Conway	16	15	2	672	92	51.69	481	139.70	0	6	77	
3	Virat Kohli	14	14	2	639	101	53.25	457	139.82	2	6	65	
4	Yashasvi Jaiswal	14	14	1	625	124	48.08	382	163.61	1	5	82	

6s  
 0 33  
 1 36  
 2 18  
 3 16  
 4 26

Mean Squared Error using Linear Regression: 1114.9164358450867

Mean Squared Error using Neural Network: 102137.78125

1/1 [=====] - 0s 86ms/step

Predicted Runs for the Next Match using Neural Network: 18.016014

Predicted Runs for the Next Match using Linear Regression: 818.508910168955

By Abhineet Raj [<https://github.com/abhineetraj1>]