IPL SCORE PREDICTION

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SOFT COMPUTING TECHNIQUES

OVERVIEW

- Introduction
- Problem
- Dataset Description
- Model Architecture
- Loss Function and Optimization
- Model Training
- Model Evaluation
- Output
- Conclusion

INTRODUCTION

- Overview:
  - Cricket is a highly popular sport, and accurate score predictions can enhance the viewing experience and assist teams in strategy formulation.
- Importance:
  - Predictive analytics in sports provides insights into performance metrics.
  - Accurate predictions can aid teams, analysts, and fans.
- Objective:
  - To develop a predictive model using ANN to forecast total runs in a cricket match based on various factors.

PROBLEM

A wide range of factors can affect match outcomes, such as the batting team's strength, the venue, the batsman-bowler interaction, and match progression (early innings vs. late innings).
Small events (e.g., a key player getting out or a sudden change in weather) can drastically impact the score.

First Problem

Traditional score prediction models often rely on historical averages and can lack accuracy.

Second Problem

Factors influencing scores are numerous and complex, including player performance and match conditions.

DATASET DESCRIPTION

The dataset comprises IPL match data from 2007 to 2017, including various features influencing match outcomes.

1. venue: The location of the match.
2. bat_team: The team batting.
3. bowl_team: The team bowling.
4. batsman (striker): The batsman currently facing the bowler.
5. bowler: The bowler delivering the ball.
6. total: The target variable (total runs scored).

SOURCE: KAGGLE

DATA PREPROCESSING

- Dropped unnecessary columns (date, runs, wickets, etc.) to focus on relevant features.
- Applied Label Encoding to convert categorical variables into numerical format.
- Used MinMax Scaling to normalize feature values, ensuring they fall within a specific range for model training.

MODEL ARCHITECTURE

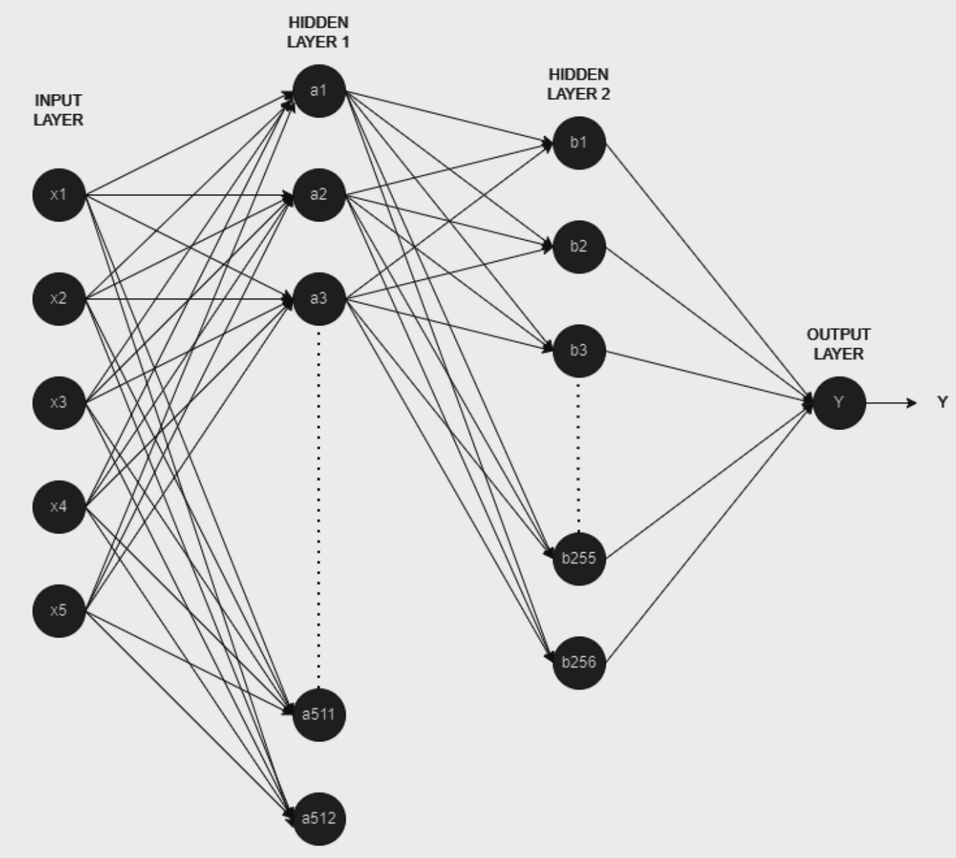
Input Layer:
5 features (venue, bat_team, bowl_team, batsman, bowler).

First Hidden Layer:
512 neurons with ReLU activation.

Second Hidden Layer:
256 neurons with ReLU activation.

Output Layer:
1 neuron with linear activation function for regression.

MODEL ARCHITECTURE



LOSS FUNCTION AND OPTIMIZATION

LOSS FUNCTION

Huber Loss: Combines the benefits of Mean Squared Error (MSE) and Mean Absolute Error (MAE). It is less sensitive to outliers compared to MSE.

OPTIMIZER

Adam Optimizer: Adaptive learning rate optimization algorithm that is efficient for large datasets and problems with high dimensionality.

These choices improve model accuracy and convergence during training.

MODEL TRAINING

Epoch

100 iterations over the training dataset.

Batch Size

64 samples per gradient update.

Data Split

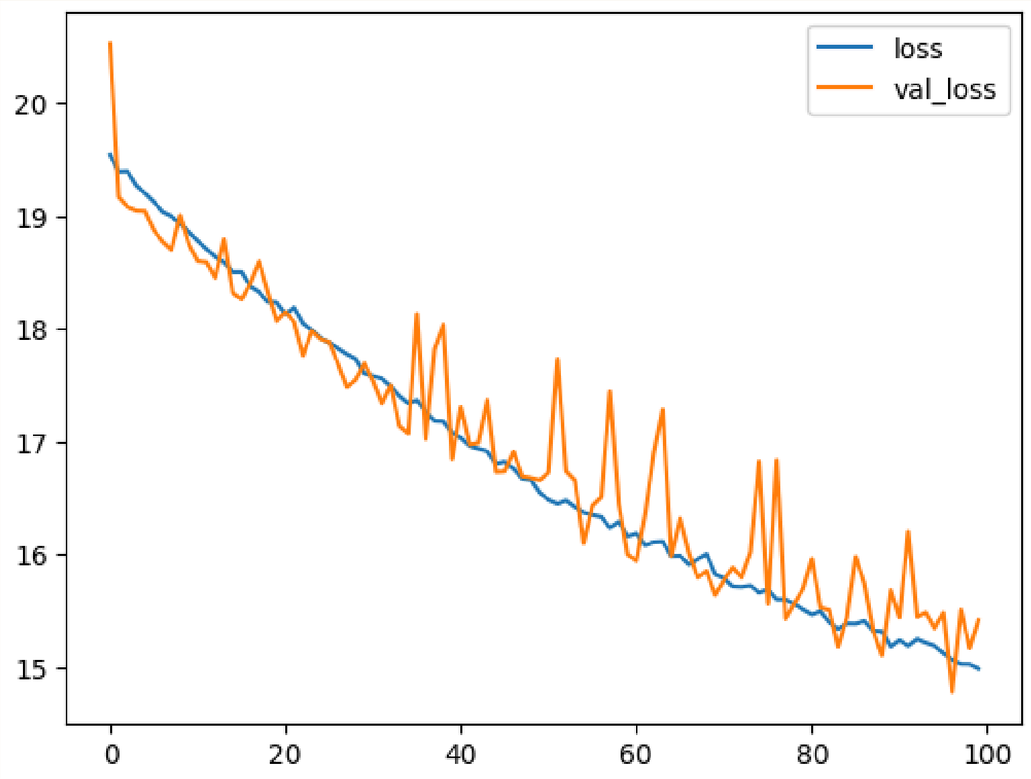
70% training and 30% testing.

```
Epoch 90/100
832/832 ━━━━━━━━━━━━━━━━━━━━ 2s 3ms/step - loss: 15.2102 - val_loss: 15.6866
Epoch 91/100
832/832 ━━━━━━━━━━━━━━━━━━━━ 2s 3ms/step - loss: 15.2174 - val_loss: 15.4433
Epoch 92/100
832/832 ━━━━━━━━━━━━━━━━━━━━ 2s 3ms/step - loss: 15.1808 - val_loss: 16.2030
Epoch 93/100
832/832 ━━━━━━━━━━━━━━━━━━━━ 2s 3ms/step - loss: 15.1707 - val_loss: 15.4484
Epoch 94/100
832/832 ━━━━━━━━━━━━━━━━━━━━ 2s 3ms/step - loss: 15.1888 - val_loss: 15.4883
Epoch 95/100
832/832 ━━━━━━━━━━━━━━━━━━━━ 2s 3ms/step - loss: 15.1642 - val_loss: 15.3458
Epoch 96/100
832/832 ━━━━━━━━━━━━━━━━━━━━ 3s 3ms/step - loss: 15.1045 - val_loss: 15.4861
Epoch 97/100
832/832 ━━━━━━━━━━━━━━━━━━━━ 2s 3ms/step - loss: 15.1349 - val_loss: 14.7879
Epoch 98/100
832/832 ━━━━━━━━━━━━━━━━━━━━ 2s 3ms/step - loss: 15.1200 - val_loss: 15.5119
Epoch 99/100
832/832 ━━━━━━━━━━━━━━━━━━━━ 2s 3ms/step - loss: 15.0197 - val_loss: 15.1709
Epoch 100/100
832/832 ━━━━━━━━━━━━━━━━━━━━ 2s 3ms/step - loss: 14.9420 - val_loss: 15.4208
```

MODEL EVALUATION

- **Mean Square Error**

  MSE = 15.9102529434174



OUTPUT DEMO

CONCLUSION

- Developed an ANN model for predicting cricket match scores using historical data and player statistics.
- The model demonstrates the capability of ANNs to handle complex relationships in sports analytics.

IPL SCORE PREDICTION

THANK YOU