



# SoCal FC

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# FIFA

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- Football Simulation Video Games
- Developed by Electronic Arts
- Release new version of the game annually
- Over of 25 years of Video Game Production



# PIPELINE

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- Motivation
- Object Detection
- Learn how to Play
- Future Scope and Problems



# MOTIVATION

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- Over 45 million people play FIFA 18
- Trendy and Complex Game
- Real Time Artificial Intelligence
- Deal with time series data



# OBJECT DETECTION

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- Data Collection & Labelling
- Preprocessing
- Model
- Output



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# Data Collection & Labelling

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- Screenshots of Game Video
- Bounding Boxes



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# Preprocessing

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- Reduce image resolution
- Dropped resolution to 900x400
- PCA Compression



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# Model & Training

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- Convolutional Neural Networks
- Single Shot Detection
- MobileNet

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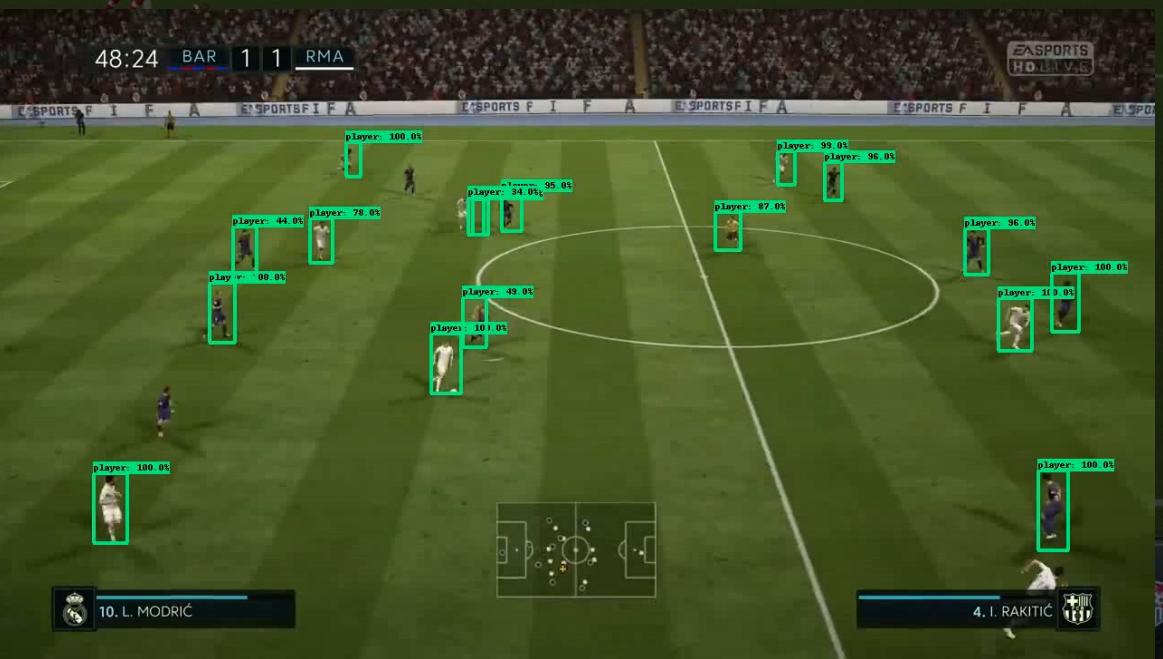


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- 128-bit feature vector
- Bounding boxes on objects like players, goal



# LEARNING TO PLAY

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- Data Collection & Labelling
- Model & Training
- Results
- Oversampling Techniques
- Updated Results



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# Data Collection & Labelling

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- Made batches of size 10 of the 128 – bit feature vectors
- Used this as input for our model to learn how to play



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# Model & Training

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- 2 LSTMs in Parallel
- One for direction of player, one for action performed by player
- Training Data: 100 MB of 128-bit vectors



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# Preliminary Results

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- Frequency of passing and shooting was lower than required
- Minority actions not properly learnt by model



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20. S. ROBERTO



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# Oversampling

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- Copied the minority class instances multiple times to increase the number of samples.
- Additional training data added



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# Updated Results

# VS AMATEUR AI

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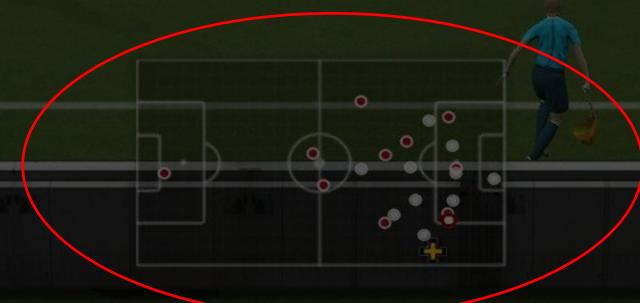


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# Future Scope & Problems

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- AI bot only plays from the left side of the field and shoots right
- Need better players for bot to learn football tactics
- Make the AI bot refer to the minimap to initiate a pass accurately



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