SOCCER TRAINING SIMULATOR

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DESCRIPTION

This development project is about creating a system software that will provide an innovative training system for soccer players. The system creates an immersive experience that allows players to train in a simulated environment.

The main motive behind the development this simulator is to provide a similar experience to what the players would be facing while playing real soccer games. Also, this training simulation can be used to analyse the overall aspects of past games played by a particular player or team. This helps them to avoid those mistakes in future to avoid injury or increase their overall efficiency in actual live games. The statistical reports generated by the system about their individual profiles will track the performance measures of various aspects of their gameplay.

Training the right way before games is a very critical aspect for a sportsperson as it will help reduce injuries and improve the overall efficiency of a player during the actual games.

A diagram showing our system design is attached at the end.

REQUIREMENTS
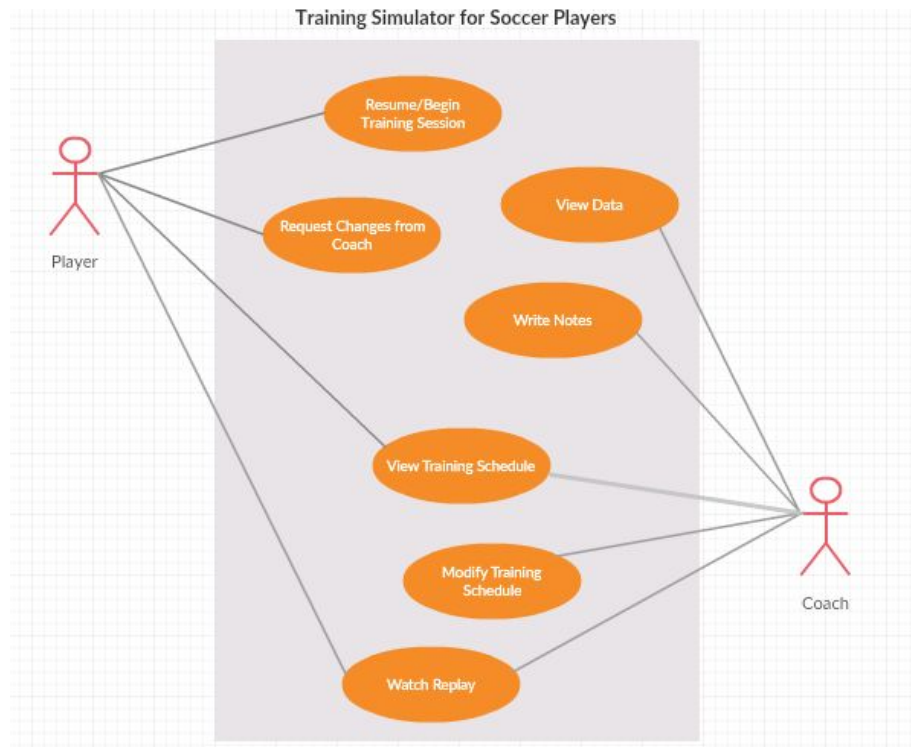
We have 2 main actors: (1)Player and (2)Coach.

The use case shows how the actors interact with the system and thus, help us define the requirements and other details of our system.

Various requirements are documented along with their ID# - Name, Description, Rationale, Fit Criterion and Acceptance Tests.

- There are 7 individual use-cases based on the product use case diagram
- There are 5 functional and 5 usability requirements.
- Performance Requirement: Includes 'Watch Replay Feature' and 'Evaluation of Product Soccer Training Simulator'.
- Maintainability and Supportability Requirement: Mainly 'Through a help desk' where the call/issue would then be forwarded to the appropriate personnel. Also, the goal is for the product to last indefinitely with proper maintenance.
- Security Requirement: A players data should not be visible to other players. Data should only be visible to the player that is the subject of the data or the coach.
- Look and Feel Requirement: the system should have a professional look and feel
- Operational and Environmental Requirement: System operates in a closed field
- Cultural and Political Requirement: Being a sports training simulator, there are NO cultural and political biases in the system.

DESIGN

To build the product we need to use both software and hardware components.

Hardware: The system consists of a 4-sided physical box that encloses an artificial pitch. Once activated, the simulator fires in balls to a waiting player, who is then directed to settle and pass that ball into a specific quadrant of the box, dribble around physical obstacles, shoot at virtual goalkeepers, etc. The system relies on an LED wall and automated 'ball boy', using fully-customisable system software to analyse performance and allow players to work on their skills.

Software: The actors for our system are the professional and beginner players, coaches, and teams from different organizations. Each actor is an entity in the soccer training database system. We are collecting real-time data of each player using hardware specified above (mostly sensors) when they are playing in the 4-sided physical box that encloses an artificial soccer pitch. This real time data is useful for tracking current skills and progress in improvement for players and coaches can make changes in training schedules and methodology based on the effectiveness of a particular method for any skill. VR technology can be incorporated to get view past plays and gain insights about the gameplay of each player using data from in-stadium cameras and other tracking systems. This will create a VR replay of the entire soccer match which can be seen using hardwares like Oculus, etc.

TESTING

For testing purposes, both acceptance and unit tests, we will need users to act as testers from clients to fully evaluate the product. There is at least one acceptance for each requirement that the system must pass before the product is accepted by the client.

- There are 14 acceptance tests in total
- There are 36 requirements in total
- Each requirement has an acceptance test
- Many requirements have share a common acceptance test
- A table has been added which shows which requirement corresponds to a particular test.
- Each test has a unique id and a short description provided.