

functional specification

Year 4 Project



November 15, 2019

Jeff Ratledge

C00220463

Contents

[Introduction: 2](#_Toc24733484)

[Target Audience: 2](#_Toc24733485)

[Product: 3](#_Toc24733486)

[Core Functions: 4](#_Toc24733487)

[Suggested Functions: 4](#_Toc24733488)

[Context Diagram: 4](#_Toc24733489)

[Use Case Diagram: 5](#_Toc24733490)

[FURPS: 8](#_Toc24733491)

[References 10](#_Toc24733492)

# Introduction:

The aim of this document is to describe how the pool wearable application is going to be developed. This document will first go into detail on the product itself and what it aims to improve for players in cue sports. I will then go into detail on what the main functions of the application are intended to be in the final product. Any other proposed functions will be documented in this section but may not be included in the final project because of time constraints. The document will include a detailed Context diagram on the system and use cases detailing each part. I will conclude the document with a section on the FURPS model and what metrics I will be able to measure from the application.

# Target Audience:

The target audience for this product are players at a beginner level of pool and snooker. The application could also be of benefit to coaches of the two sports to aid in the teaching of their students. Currently there is no available application of this type to help beginners so there is little competition with regards the amount of interaction there is between the application and the user. People of all ages can start playing cue sports so the applications design needs to be simple and understandable to almost everybody if I want it to appeal to the entire player base. If current coaches believe in the idea then they are more likely to recommend it to players which would be a large benefit.

# Product:

The application is a wrist wearable that will be designed to monitor and hopefully improve the cueing of beginner level players in the games of pool and snooker. The product will be a mobile application for both iOS and Android and will be developed using the Xamarin framework and C#. The Movesense wearable device has movesense plugins available for developers in the Xamarin environment and allow them to connect and control the movesense sensors the user data will be stored in an SQL lite database.

Many new players to the games struggle with being able to consistently pot balls and this usually comes down to how they hold the cue and deliver it as they take strokes at the cue ball. This product for example, on a right-handed player will be worn on the right wrist or “cueing arm” of the player and will intend to monitor the motion of their strokes on their wrist. From the data received from these strokes the application should be able to determine if the player is delivering the cue in a straight line and if not what the player could do to improve this movement.

A group of people in a room

Description automatically generated

Example of player stance (147academy, n.d.)

In the image above you can see the stance of an average player from two right-handed and two left-handed players. The back arm of all for players at a resting position you will notice is perpendicular to the ground. This is the wrist the user will wear the movesense sensor on. As the player cues each shot the device will record the data from the movements and the application will be able to determine if they are cueing the object ball straight.

# Core Functions:

* The user will be able to create an account
* The user will be able to log in to the mobile application with their account
* The user will be able to see the data from their current shot
* The user will be able to distinguish between a “good” shot and a “bad” shot
* The application will suggest what the user can do to improve the shot

# Suggested Functions:

* The user will be able to select the shot type they wish to practice from the application
* The user will be able to view their progress on each shot type
* The user can view the motion of their cueing from the shot they have taken
* The application will be able to determine if the player plays differently under different condition such as nervousness
* Different levels of user access for players and coaches
* A coach could access a player’s data to review performance

# Context Diagram:

A picture containing text

Description automatically generated

# Use Case Diagram:

A picture containing text, map

Description automatically generated

|  |  |
| --- | --- |
| Use Case Name | CRUD Account |
| Pre-Conditions | User has downloaded the application |
| Description | User will be able to create an account |
| Main Success Scenario | * The User will be able to create an individual username with their email address * The user will be able to create a password * The account will be created |

|  |  |
| --- | --- |
| Use Case Name | Login |
| Pre-Conditions | The user has created an account |
| Description | User can log into an account |
| Main Success Scenario | * The user will be able to enter their username * The user will be able to enter their password * The user will be able to log in to their account |

|  |  |
| --- | --- |
| Use Case Name | View Shot Data |
| Pre-Conditions | User is logged into the application  User has taken a shot with the wrist wearable on |
| Description | User can view current shot data |
| Main Success Scenario | * The user will be able to view the data about the previous shot they have taken |

|  |  |
| --- | --- |
| Use Case Name | View All Shot Data |
| Pre-Conditions | The user is logged into their account |
| Description | Display all information to user on shot movements |
| Main Success Scenario | * The user will be able to see all the data collected on each shot they have taken while wearing the movesense sensor |

|  |  |
| --- | --- |
| Use Case Name | Logout |
| Pre-Conditions | The user is logged into their account |
| Description | The user wants to log out of the application |
| Main Success Scenario | * The user will be at the login screen of the application |

# FURPS:

Functionality:

* This is analysing the Uses, Functions and security of the system to determine the level of success. In relation to my project I will look at the core functions I set out in this document and these will be the main priority for the functionality I wish to achieve. I will then work on any of the suggested functions.

Usability:

* This is assessed by how easy to use the system is. This takes a number of different points into consideration such as the look of the system, how long it takes to perform simple tasks and how well new users can interact and learn the system. For my system I plan to develop a very simple and easy to use mobile application. The users primary concern when using the app will be viewing the breakdown of the data received from the shots they perform.

Reliability:

* Reliability is evaluated by how consistent the system is overall. This relates to all of the functionality being useable, how consistent the metrics are and are they measurable. From the data the user should be able to see what they did wrong when executing a shot, this may prove hard to measure as each shot is played differently and I will need a starting point or standard to measure from.

Performance:

* The performance of the system has to be tested. This includes how quickly it is to load, how much processing power is required and how efficient it is on resource consumption. I will perform testing to make sure the applications loading times and account creation times are not too severe. For example, the application should load within 5 to 10 seconds and account creation should not take more than 20 to 30 seconds.

Supportability:

* Supportability relates to the continued improvement and testing of the system. Any planned features would have to be tested before being added to the app and also some issues or bugs may arise that were not found in testing. This means the app will need continuous attention to be sustained.

# References

Anon., n.d. *www.147academy.com.* [Online]   
Available at: http://www.147academy.com/index.php?option=com\_k2&view=item&layout=item&id=369&Itemid=950  
[Accessed 15 November 2019].