Faculty of Computer Science

Kickboxing style enhancement while training

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Thesis advisor: Dr. Ayman Ezzat

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I am heartily thankful to my role model and my best supervisor ever Professor Ayman Ezzat for guiding me to the right pass, and helping me a lot in the (kicking boxing style enhancement while training) project, and the opportunity to do this project. He always said to me “with more effort you can achieve the impossible”.
I am thankful for the beautiful committee that helped me so much, and telling me so much suggestion to put in my project to be perfect, and always being patient with me in many and many rehearsals and discussions.

Supervisor

Professor Ayman Ezzat

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Professor Hisham Mansour

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Chapter 1
Introduction – Proposal

Abstract

In this paper, we present a very modern approach in learning and correcting, posture, body motion using Kinect cam to receive real-time response to help the player exercise safely. ,studying alone without a professional guider or trainer can led to severe muscle injuries, we are not saying you can't study alone, but you must understand what you're doing well to avoid severe muscle injuries and it can lead to bad habits. Therefore, learning the proper body motion, and posture of this sport is important for your safety.

1 Introduction

In these **four** figures **blow** we will explain how to do the jab punch.

Correct Stance (1): step forward with lead foot.

Figure (1.0). Step forward with lead foot.

Correct Stance (2): extend arm out.

Figure (1.1). Extend arm out.

Wrong Stance (3): don't put your shoulders up.

Figure (1.2). Don't put your shoulders up.

Wrong stance (4): don't lean forward

Figure (1.3). Don't lean forward

1.1 Background

Kickboxing is an important traditional martial art. It has been taught since 1970s. And also it has become a modern sport for today. Many adult and children not only in japan but also in many countries participate in that type of martial art. However, studying alone without a professional guider or trainer can led to severe muscle injuries, I'm not saying you can't study alone, but you must understand what you're doing well to avoid severe muscle injuries and it can lead to bad habits. Therefore, learning the proper body motion and posture of this sport is important for your safety.

1.2 Motivation

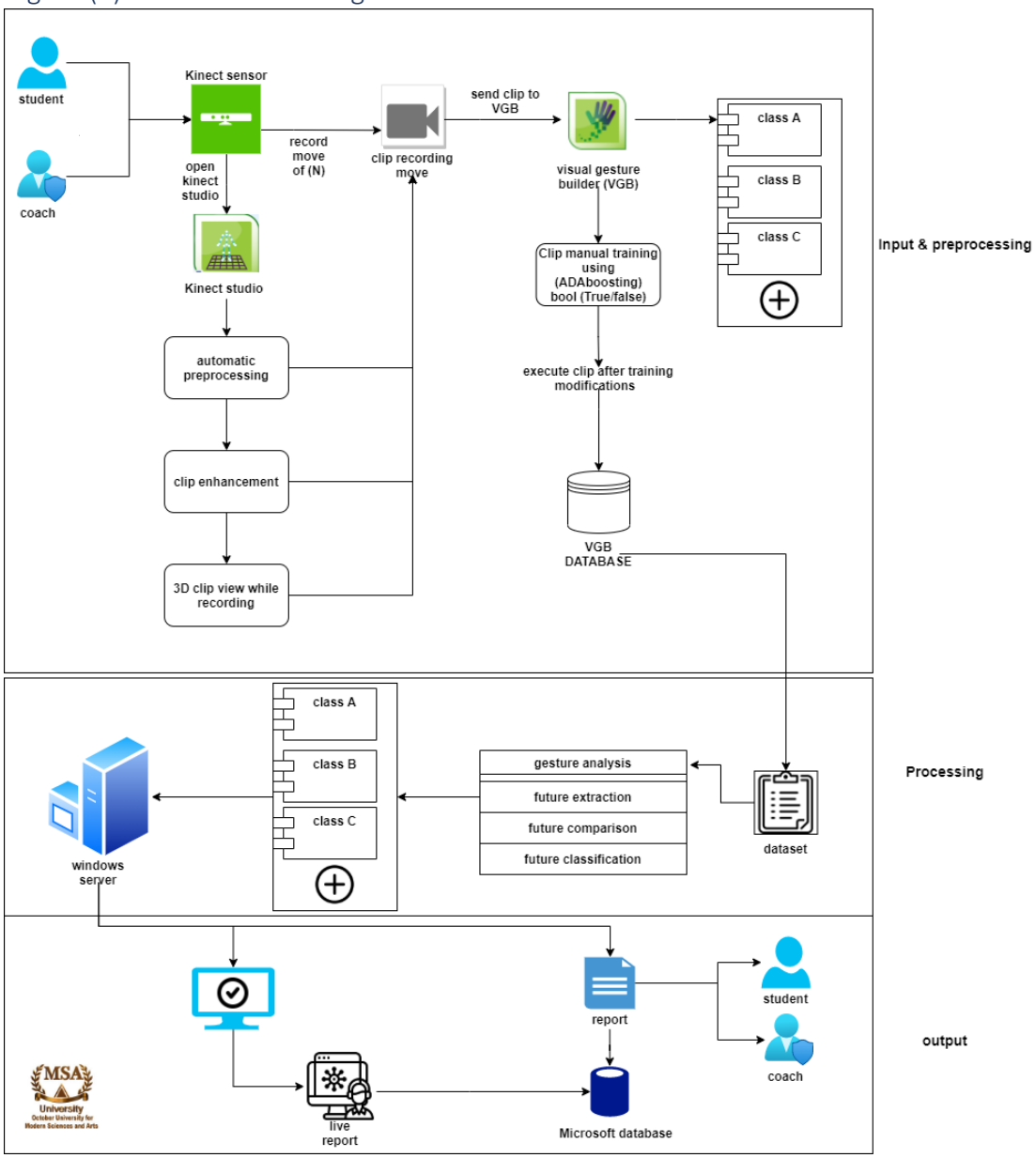
In this project our main motivation is practicing at home at any time with less money consumption, and of course money consumption is a headache for many people as they pay lot of money on personal trainers. At an interview with a coach in "UFC" gym "Ali el magrabi" he said "most students have only one instructor", and that can be a problem for most student when they learn hard moves.so, the tracking technology can be useful for that problem. Because this system is similar on how a trainer or coach tracks a participant when he or she does a movement. There are some technical challenges the system will face such as, giving feedback for the user in real time, capturing the 26 joins in the human body and saving it in the database in real time. Comparing the two-time series with each other to get the right move. This system is developed to make the martial art more favorable to practice without leaving home, and without consuming a lot of money. Our goal is to create a software that help the user to practice martial arts without the need for an instructor.

1.3 Problem Definitions

Many developers around was trying to develop a sport training system to help individuals to have self-training for specific branch of sport that is depending on human POS like (kick-boxing) those developments was dedicated to one sport at a time separately there are no common system or single system platform that can including all those sports at once, so the system will be generalized to any type of human-poses martial art, but the many focus of the system in the first phase is kick-boxing.

Project Description

Figure (2). Architectural Design.



2.1 Scope

My project will make the user insert new move using visual gesture builder(VGB), which will be helpful for the user and the coach, by making the student study the moves alone in home, and also give's real-time feedback which will be helpful for the student to now if his right or wrong. The program is mostly for learning kickboxing via Kinect cam 2.0 or higher.

2.2 Project Overview

The system will work with Kinect cam 2.0, which it has its own Software development kit (SDK) that can be used to develop the training set by recording the clip using Kinect studio, after the clip is recorded we can take this clip, and start the analysis phase which we will use the clip to make our own training set using visual gesture build (VGB). In (VGB) the tool it works with an algorithm that is could ad-booster which it can be used in classifying the correct move. After creating the moves using (VGB), we can take the trained set, and put it in our system by just taking the auto-created (.txt) that was created using (VGB), and put it in our system.

2 Similar System Information

- **Injury and injury rates in Muay Thai kick boxing. British Journal of Sports Medicine, 35(5), 308-313. doi:10.1136/bjsm.35.5.308**

  In this article it talks about how to know the types of injuries that occurred during the training of Maui Thai kick boxing and to compare the data obtained with other older surveys from different martial art types. The main problem of this article is that it's Unable to record the number of injures of beginner students or participants, because due to the lack of users in that type of martial arts and the older studies does not study that type of martial arts. the researchers contributed to solve the problem By They started to make surveys specially for that type of martial arts to solve the problem, and they targeted many people who are experienced and not to get the best result, and also, they compared the surveys to the older study, and the main results showed that soft tissue injuries were the most common type of injured the kickboxer can get injured to. At last, in my point of view this paper give's a lot of problems that motivate us to make this system, to lower the number of injures by making a system that help the user practice safer.

- **Kaewplee, K., Khamsemanan, N., & Nattee, C. (2013). Muay Thai Posture Classification using Skeletal Data from Kinect and k-Nearest Neighbors.**

In this article they presented a technique that identifies Maui Thai posture from each player movement of the body using Kinect, each player needs to study and practice various types of postures and every posture is a combination of multiple limbs so it's are to study alone for example In front your mirror, and watch every limb movement. They started making a system using Kinect cam v2.0 and collected a sequence of skeletal data from each body movement, to make a system that can help any martial art player specially Maui Thai players to study alone. They focused on 3 types of martial arts moves, and that is straight punch, swing punch, and also, upper cut. In this paper they are trying to make a system similar to mine using 1-nn technique based on dynamic time warping to identify Maui Thai postures

- ***Game Based Approach to Learn Martial Arts for Beginners. 2012 IEEE International Conference on Embedded and Real-Time Computing Systems and Applications.*** **doi:10.1109/rtcsa.2012.37**

  In this article they tried to make a game based martial arts system that requires emphasis of gesture movement with the aid of the Kinect sensor. There is No good games that make the person study martial arts alone at home. The researchers contributed to solve the problem by making a system that is user friendly that are not expensive to buy on Xbox. The researchers reached has revealed that this game helped the learners of martial arts get interested in the martial art. However, they never personally experienced it yet. In this paper it is proven that you can learn without any personal trainer, by just using a simple game and a cam.

- **Ogawa.T., & Kambayashi.Y. (2012). Physical Instructional Support System Using Virtual Avatars. ACHI 2012, The Fifth International Conference on Advances in Computer-Human Interactions. IARIA, 2012, pp. 262-265.**

  In this article they say it is extremely important for player to learn typical motion types. The paper says or emphasized about the importance of imitation learning. It proposed a learning system to help the user and the trainer. The results revealed the Kinect cam detection rate were high but the depth accuracy is not so much depending. They were using Kinect cam v1 so maybe we can use a higher version can help solve the depth problem.

- **Thai Art of Self Defense and Boxing by Motion Capture Technique"; ICCMS '09, pp 152-155, Macau, Mar. 09.**

  The correctness of when a player is participating and proper postures were regarded as important. They focus on sport man injuries. They modeled a 3d avatars with motion capturing in 2 actors with 42 joins point on the human body. The result showed or reveled that that the system helped lower injures in this paper it is proven that Kinect cam can be used in martial arts to improve the person body health.

- **Thiparpakul, Poom & Limprasert, Wasit. (2017). New Design System to Learning Martial Art Via Kinect 2.0. 89-93. 10.1145/3029387.3029413.**

  In this paper they presented day way to deal with right player body movement and stance utilizing with a RGBD sensor that interfaces players to their expert coach to get ongoing reaction to control the player practices safely. Hand to hand fighting frequently has just one coach, and that can be an issue for beginners when they learn a difficult movement. The following innovation can settle this issue, since this innovation is like how a teacher tracks an understudy when the person does a movement. The result showed or revealed that the system was very useful which it can record any advanced trainer movement, which can help the participant study it online alone. In this paper they say that the system is an offline bet version. However, it can be useful to know how can I make my system online and be opened in the cyber world which any one can study.

3.1 Similar System Description

A system proposed by Thiparpakul, Poom & Limprasert, Wasit. (2017). they presented day way to deal with right player body movement and stance utilizing with a RGBD sensor that interfaces players to their expert coach to get ongoing reaction to control the player practices safely.

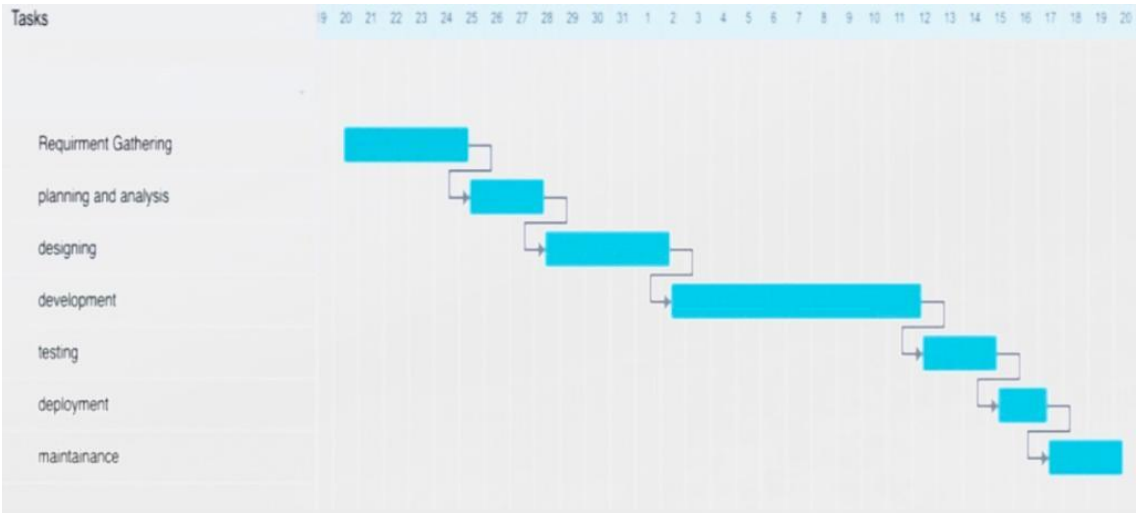
3.2 Comparison with Proposed Project

They didn't make an insert move function in their system. However, in this system will make the coach insert any move he wants by just one click, and also, they didn't put the system online they just stick with an offline bet version of the system.

4 Project Management and Deliverable

4.1 Tasks and Time Plan

Figure 3.0. Task and time plan



Previous gnat chart provides information about tasks and deadlines of project.

4.2 Budget and Resource Costs

Kinect cam v2.0 worth 2,500 or azure Kinect cam worth 11,000

Chapter 2

Software requirement specification

1 Introduction

1.1 Purpose of this document

This document describes the software requirement of the proposed system.

1.2 Scope of this document

In this document we will describe the software requirements of a system developed to check if the martial arts move's especially kickboxing, are right or wrong. Using Ada-booster algorithm

1.3 Overview

The system will work with Kinect cam 2.0, which it has its own Software development kit (SDK) that can be used to develop the training set by recording the clip using Kinect studio, after the clip is recorded we can take this clip, and start the analysis phase which we will use the clip to make our own training set using visual gesture build (VGB). In (VGB) the tool it works with an algorithm that is could ad-booster which it can be used in classifying the correct move. After creating the moves using (VGB), we can take the trained set, and put it in our system by just taking the auto-created (.txt) that was created using (VGB), and put it in our system.

1.4 Business Context

The company that is sponsoring our project could ultimately fighting championship "UFC", it is a mixed martial arts company or brand, which It did established itself as the nation best fighting cage circuit, and its main mission is to promote the martial arts sport or the mixed martial arts in world sport.

2 General Description

2.1 Product Functions

The developed system uses Ada-booster which will result for getting the best similar dataset possible, and that can help us in our project for getting the best move in kicking boxing either its right or wrong.

2.2 Similar System Information

A system proposed by Thiparpakul, Poom & Limprasert, Wasit. (2017). they presented day way to deal with right player body movement and stance utilizing with a RGBD sensor that interfaces players to their expert coach to get ongoing reaction to control the player practices safely.

2.3 User Characteristics

The system has 2 types of users:

1. coach: this user analysis the student movement and insert new move in the system, so the student can study them alone from any where
2. Student: this user can track his daily study life in martial arts with his coach though the system by revising feedback results, and also trying moves.

2.4 User Problem Statement

The user aims to practicing at home at any time with less money consumption, and of course money consumption is a headache for many people as they pay lot of money on personal trainers.

2.5 User Objectives

The user aims to solve practicing at home at any time with less money consumption, also reduce wasted time.

2.6 General Constraints

Computer, Kinect cam v2.0 or higher such as azure Kinect cam

Functional Requirements

Table 1: insert new move

Use case ID	1
Use case name	Insert move
Actor	Coach
Description	The coach will login after he log in he can insert new move in the database by using (VGB).
Pre-condition	The Kinect cam must be on, and he must be standing In front of the cam so the sensor can detect his x, y, z axis
Post-condition	Store type of move and its name in the database after applying
Main flow	1. the coach click insert move bottom 2. he stands In front of the sensor 3. the system starts to take x, y, z axis from the skeleton 4. he gives a name for the move 5. stores it in the database 6. Copy(.txt)file in the system from(VGB)
Alternative flow	None
Input	X, y, z axis
Output	None

Table 2: login

Use case ID	2
Use case name	Log in
Description	System allow users to log in into system
Pre-condition	Each user must have account on the system
Post-condition	System display home page
actors	Admin , user
Main flow	1)system login use case 2) The system ask users to enter the ID. 3)the system ask users to enters the password 4) The system checks the users ID and the password. 5) The system displays the home page.
Alternative flow	System print massage invalid log in to user to renter the ID or the password.
Input	User ID and password
Output	Display home page

Table 3: register

Use case ID	3
Use case name	ADD user
Actor	Admin
Description	The admin can login the system, and add any user he went to the system
Pre-condition	He must fill all the blanks
Post-condition	Store type of user in the system
Main flow	1. the admin login, and after he login in the user manager button will be available for him if his An admin 2. He can then add all the user information such as name, user name, email, roll etc…..
Alternative flow	None
Input	Name, username, email, user roll, password etc...
Output	None

Table 4: test move

Use case ID	4
Use case name	Test move
Actor	admin, user
Description	The student will login after he log in, he can test any move in the database.
Pre-condition	The Kinect cam must be on, and he must be standing In front of the cam so the sensor can detect his x, y, z axis
Post-condition	Store type of move and its name in the database after applying
Main flow	3. the student click test move bottom 4. he stands In front of the sensor 5. the system starts to take x, y, z axis from the skeleton 6. live feed back
Alternative flow	None
input	X, Y, Z axis
output	Live feedback

Table 5: store data

Use case ID	5
Use case name	Store data
Actor	admin, user
Description	The data will be inserted in the database, either it was information of the account, dataset moves or feedback
Pre-condition	There must be a data to store
Post-condition	None
Main flow	1. After you register the information will be stored in the database 2. After finishing a session, the feedback will be stored in the database 3. The dataset moves will be stored in the database
Alternative flow	None
input	Dataset, account information, feedback
output	None

Table 6: show data, feedback

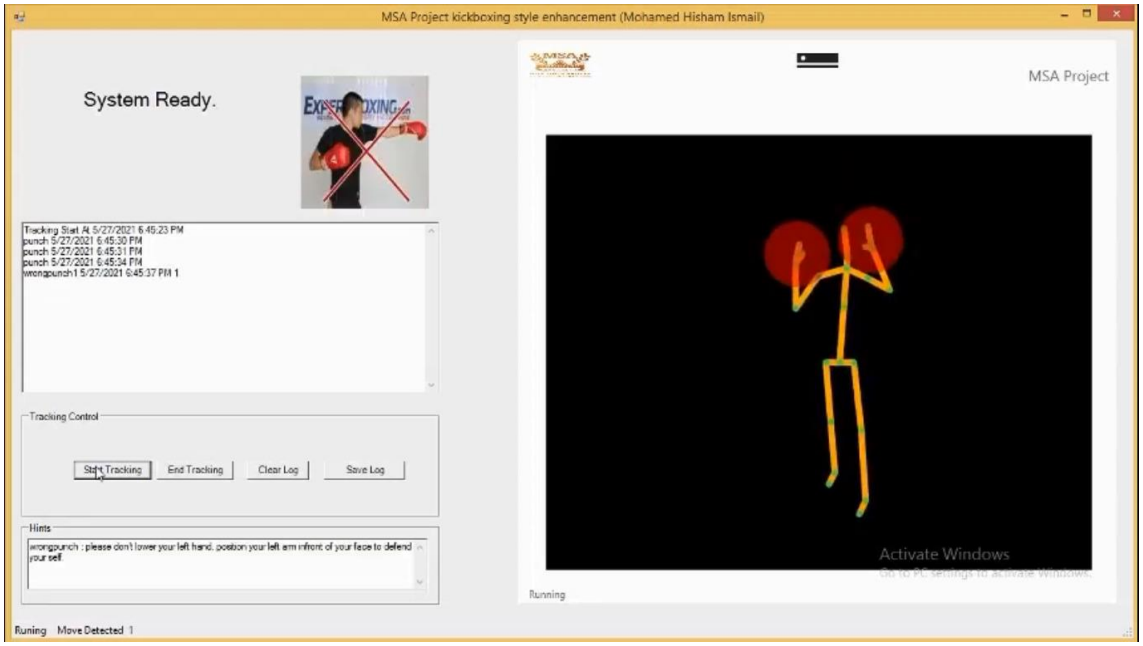
Use case ID	6
Use case name	Show data, feedback
Actor	coach, student
Description	The system will show feedback of the right move if a wrong move was detected or if the coach wants to see the feedback after it was recorded to improve accuracy of the system.
Pre-condition	You must be registered as a coach in the system
Post-condition	None
Main flow	The coach press show feedback after the session ends. The feedback will have hint for the wrong move, and the number of wrong moves detected, and some bar charts While the session is on the student can see the feedback live while he's doing the move
Alternative flow	None
Input	Feedback, account, information
Output	Feed back

4 Interface Requirements

4.1 User Interfaces

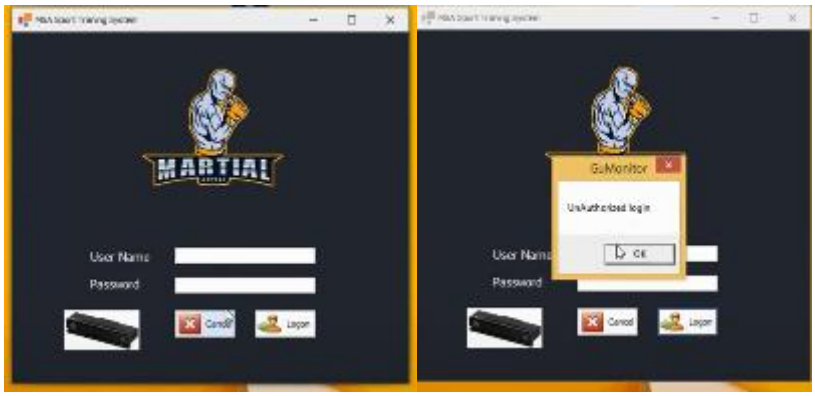
Figure 3. Test interface

In the test interface form the user can start a session by clicking on the (Start tracking) button, and if he want to end the session he clicks on (End tracking) button, and also we have (clear log), and (save log)



6.1.1 GUI

Figure 3.1. Registration and login form



In this figure above the user login via. Account.

5 Performance Requirements

Kinect v 2, 0 or higher such as azure Kinect cam

6 Design Constraints

6.1 Hardware Limitations

Kinect v2.0 or higher

7 Other non-functional attributes

7.1 privacy

User information protected from hacking by e-mail and password.

7.2 Binary Compatibility

- It can work on a windows operating system.

7.3 Reliability

- The system will be user friendly

7.4 flexibility

- System is not complex, and easy to understand its features that system provides.

7.5 Portability

System is tangible and can be moved from one location to another

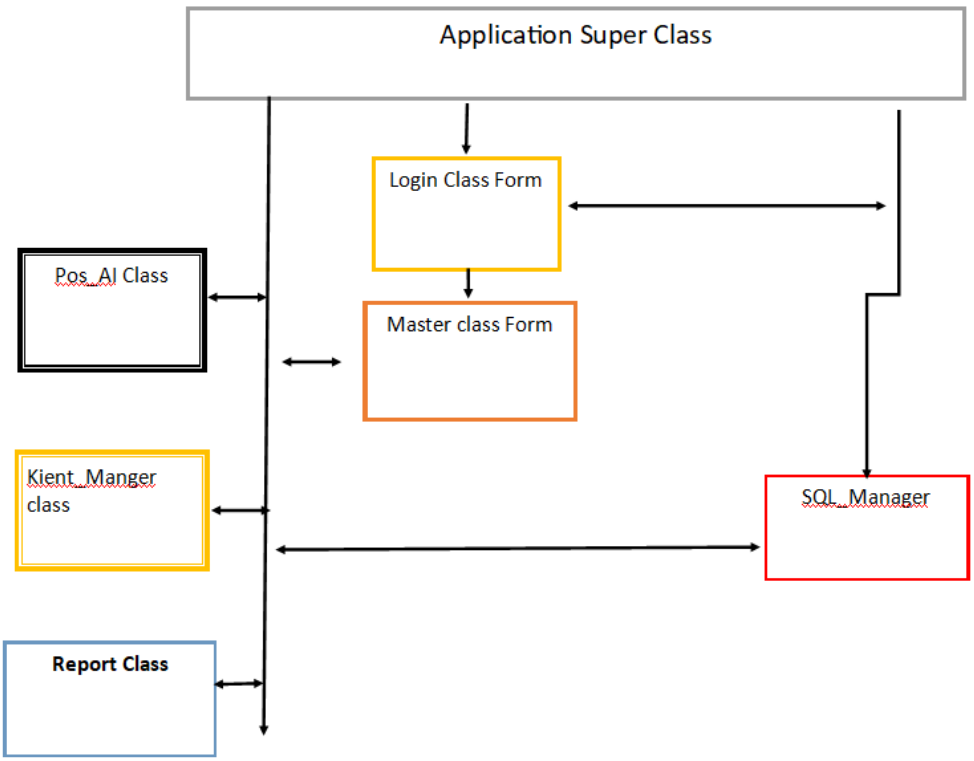
7.8 maintainability

- System is easy to maintain

8. Preliminary Object-Oriented Domain Analysis

8.1 Inheritance Relationships

Figure 4. Inheritance relationships



8.2 Class descriptions

The system has a main class's application, and sub-classes such as login, master, poses-AI, Kinect manger, report, SQL, manager.

8.2.1 Class name

User detector

8.2.2 List of Super classes:

Application

8.2.3 List of Subclasses:

1. Login form class
2. Master
3. poses-AI
4. Kinect manger
5. report
6. SQL

8.2.4 Purpose:

To help the user understand the functions of the system.

8.2.5 Collaborations:

System interacts with database to store on.

User interact with database to store on.

8.2.6 Attributes:

ID should be integer

Name should be string

Password should be string

8.2.7 Operations

Login

Register

Take readings of sensor.

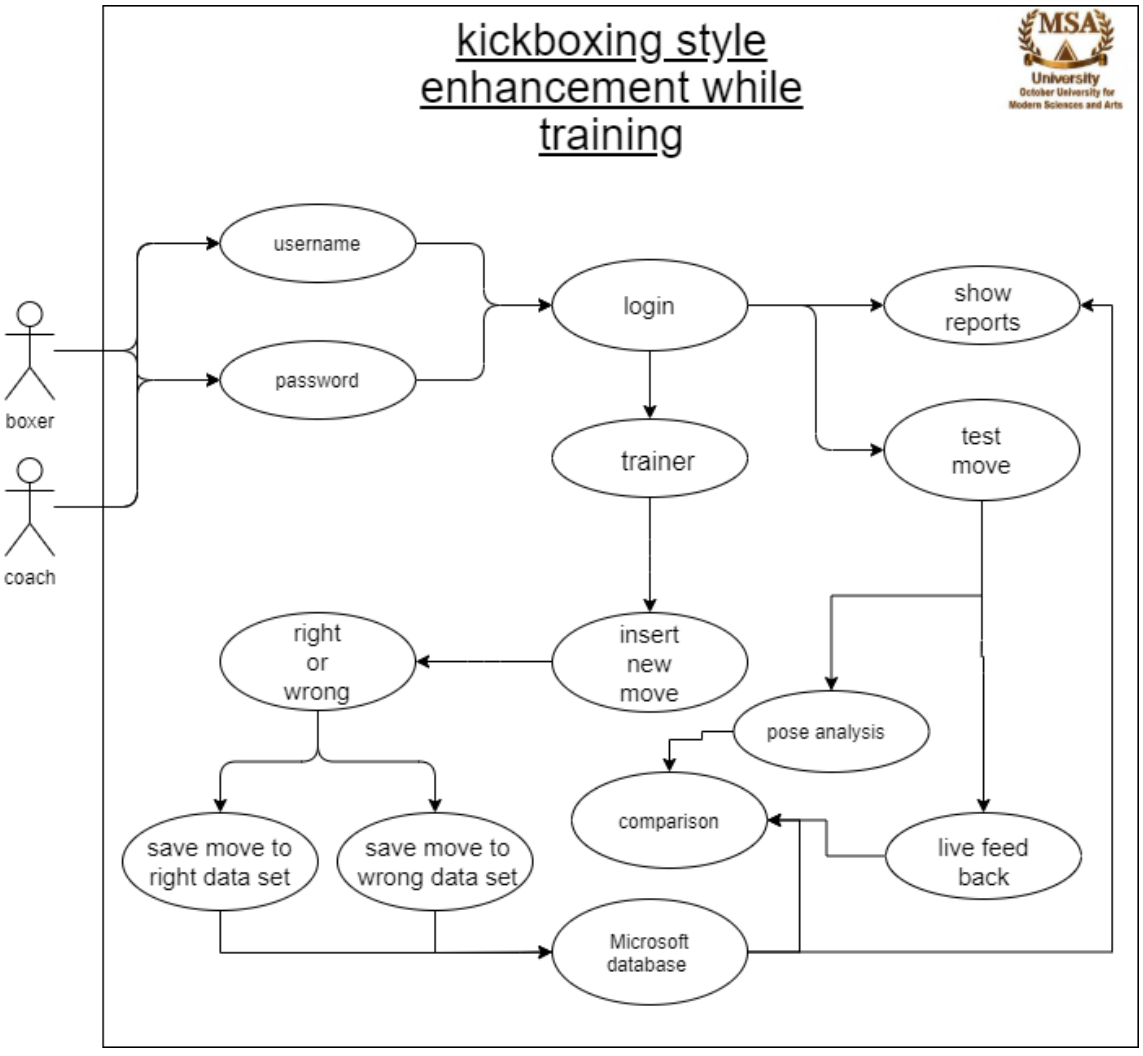
Store on database

8.2.8 Constraints:

The data set has wrong entries

9 Operational Scenarios

Figure 5.use case



11 Preliminary Budget Adjusted

Kinect cam device 2000-11000

12.1 Definitions, Acronyms, Abbreviations

12.2 Collected material

Table 7. (Ada-booster). Definition

Term	Definition
Adaptive Boosting (Ada-booster)	It an algorithm in machine learning, which it can be used to classify to improve performance. More recently it may be referred to as discrete **Ada-Boost** because it is **used** for classification rather than regression.

Chapter 3

Software Design Document

1 Introduction

1.1 Purpose

In this documentation we will identify and show the system components, system architecture, design pattern, and also what will be the goal of the proposed system.

1.2 Scope

It's a system developed to make the user play martial arts at home especially kickboxing, which the system will allow the trainer to insert new moves for his student, show live feedback for the student while his doing the move, using Kinect cam v2.0 or higher.

1.3 Overview

The system will work with Kinect cam 2.0, which it has its own Software development kit (SDK) that can be used to develop the training set by recording the clip using Kinect studio, after the clip is recorded we can take this clip, and start the analysis phase which we will use the clip to make our own training set using visual gesture build (VGB). In (VGB) the tool it works with an algorithm that is could ad-booster which it can be used in classifying the correct move. After creating the moves using (VGB), we can take the trained set, and put it in our system by just taking the auto-created (.txt) that was created using (VGB), and put it in our system.

1.5 Definitions and Acronyms

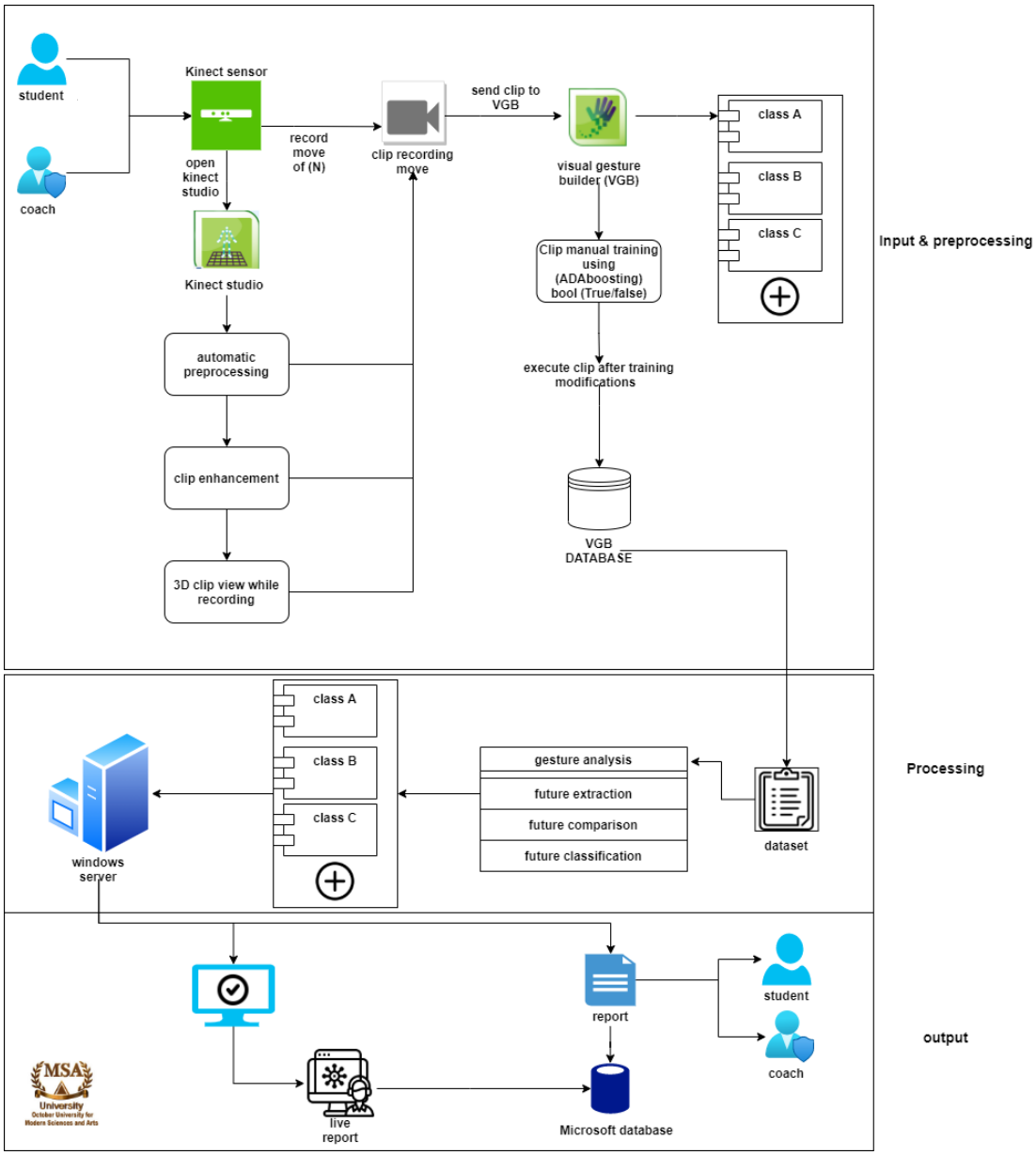
Term	Definition
Adaptive Boosting (Ada-booster)	It an algorithm in machine learning, which it can be used to classify to improve performance. More recently it may be referred to as discrete **Ada-Boost** because it is **used** for classification rather than regression.

3 System Overview

our project will make the user insert new move using visual gesture builder(VGB), which will be helpful for the user and the coach, by making the student study the moves alone in home, and also give's real-time feedback which will be helpful for the student to now if his right or wrong. The program is mostly for learning kickboxing via Kinect cam 2.0 or higher.

3 System Architecture

3.1 Architectural Design



Decomposition Description

Figure 6. Main class diagram

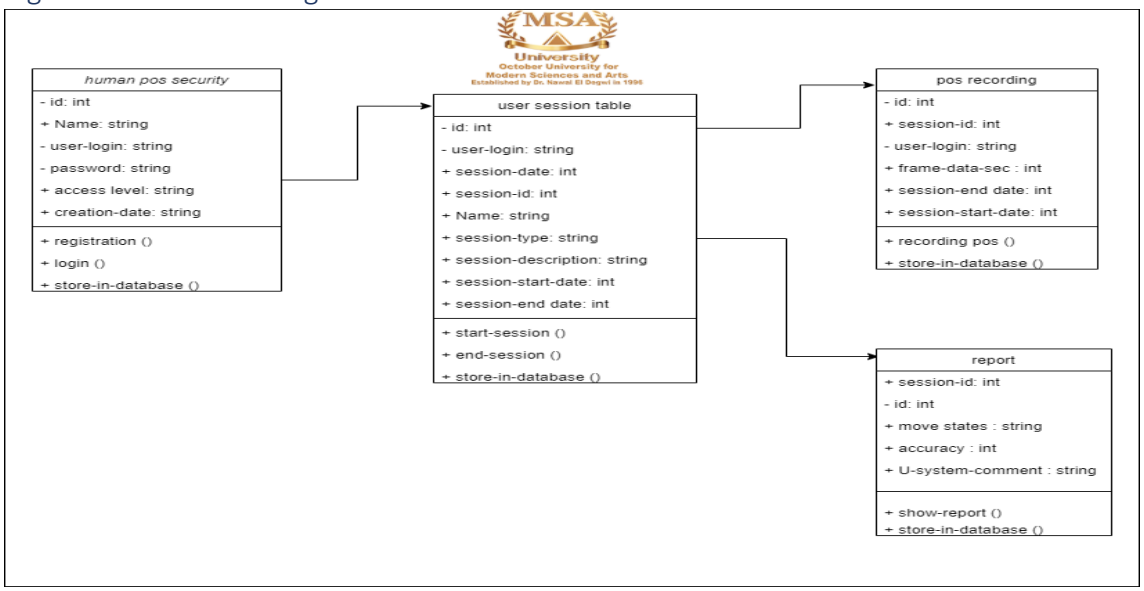


Figure 6.1. Register sequence diagram

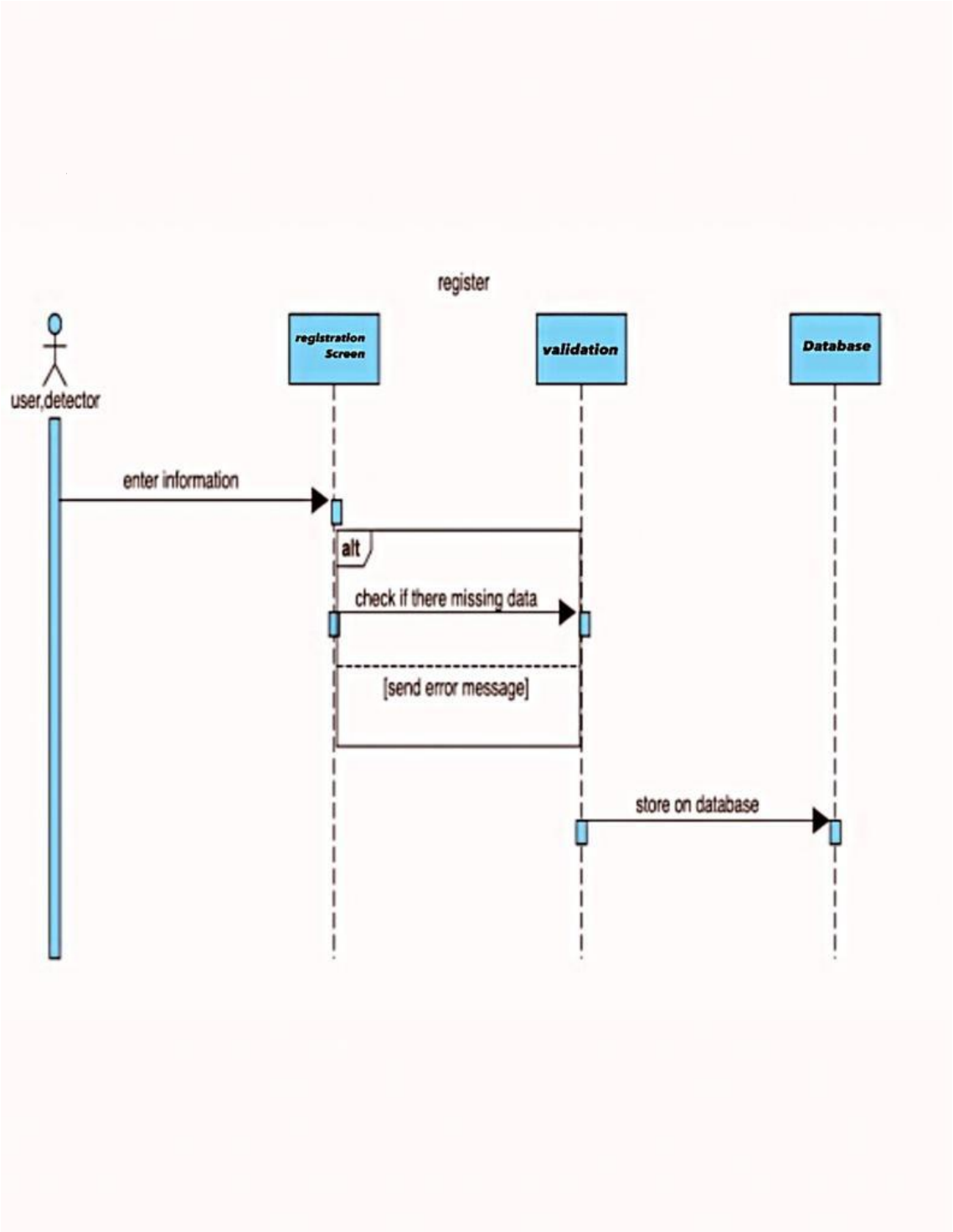
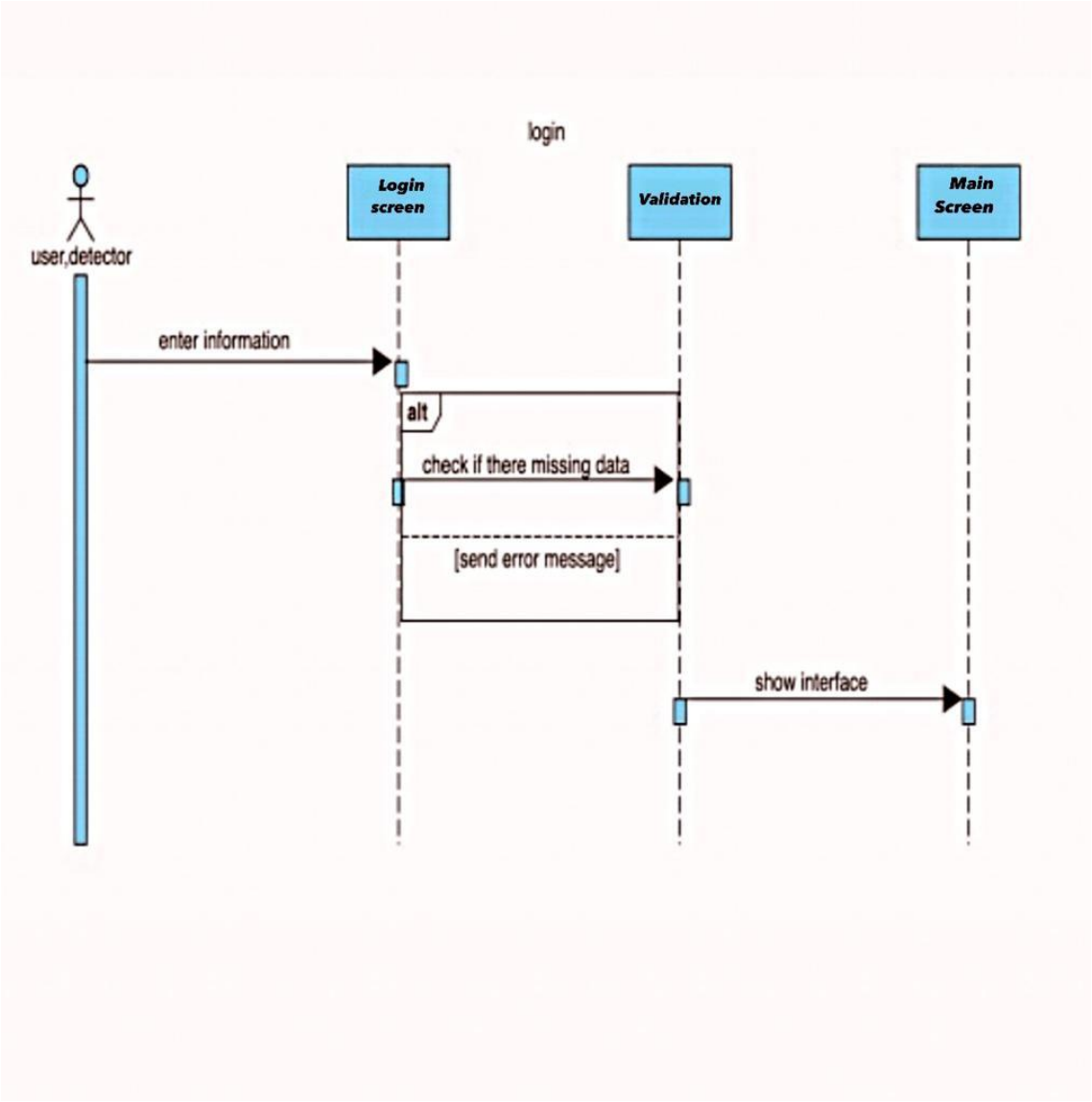


Figure 6.2. Login sequence diagram



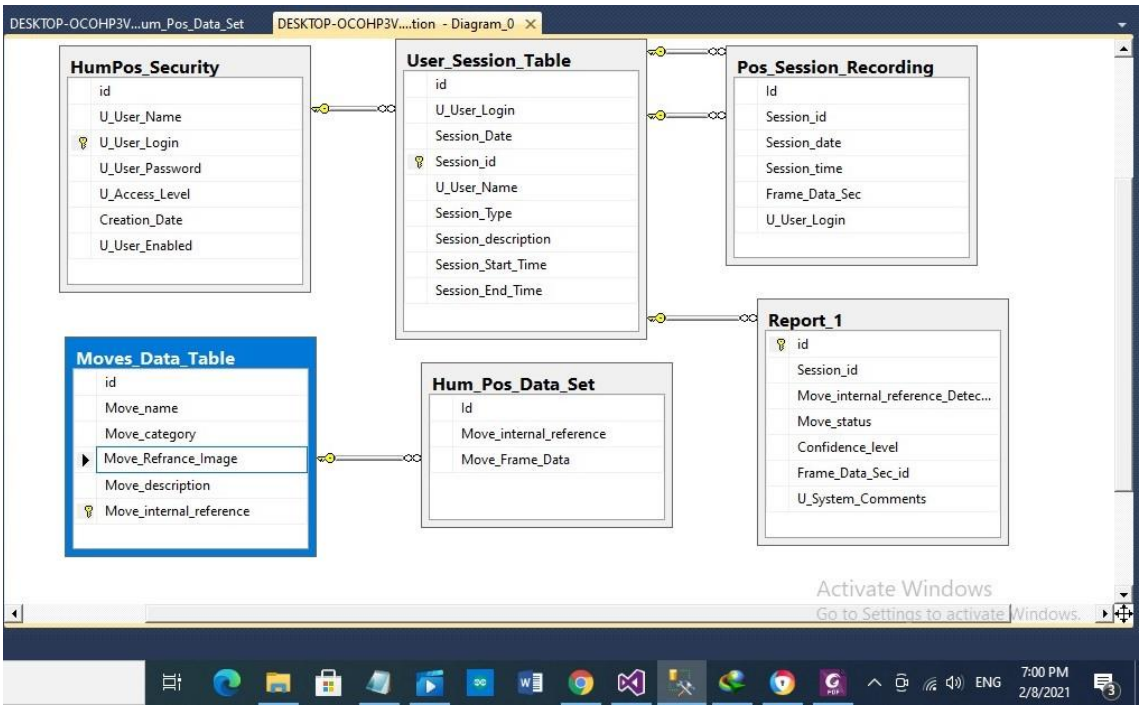
3.3 Design Rationale

The system will work with Kinect cam 2.0, which it has its own Software development kit (SDK) that can be used to develop the training set by recording the clip using Kinect studio, after the clip is recorded we can take this clip, and start the analysis phase which we will use the clip to make our own training set using visual gesture build (VGB). In (VGB) the tool it works with an algorithm that is could ad-booster which it can be used in classifying the correct move. After creating the moves using (VGB), we can take the trained set, and put it in our system by just taking the auto-created (.txt) that was created using (VGB), and put it in our system

4 Data Design

4.1 Data Description

Figure 7. Database diagram



4.2 Data Dictionary

The users are divided into two types the coach and student.

The system user takes the readings of sensors and store them in database.

The system can after that compere each dataset with each other.

5 Component Design

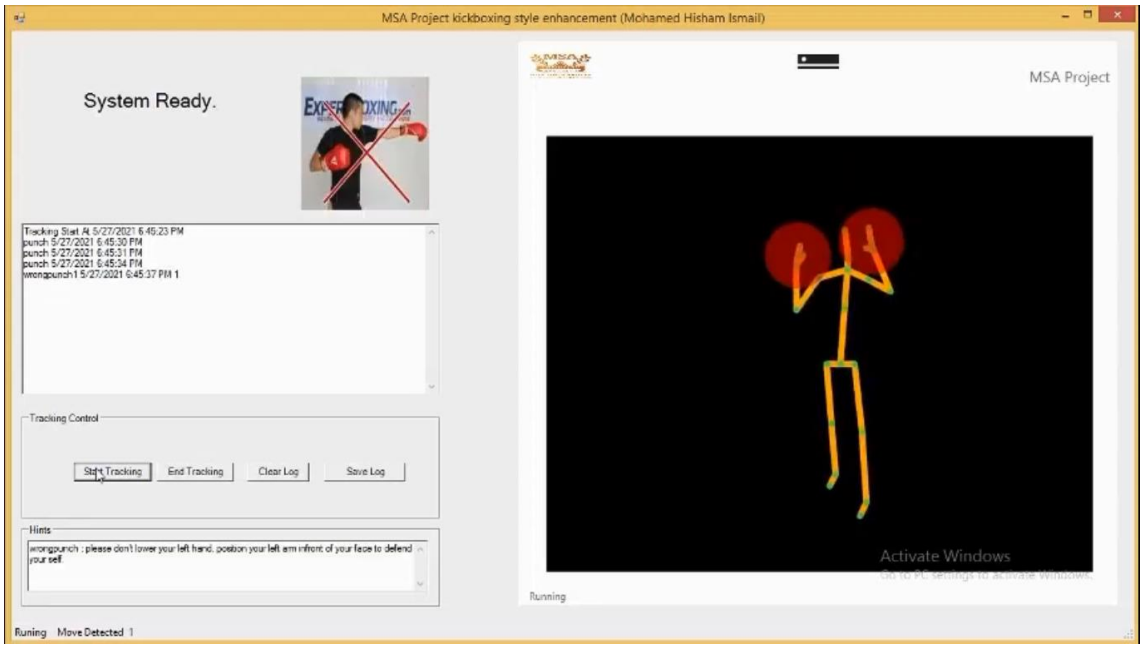
All actors must register to system and select the type of account then login to the system, system users are divided into two types, the main user who use the system to insert new move for the student, the second one is the student who use system to do the moves that were inserted by the coach to check if the move is right or wrong

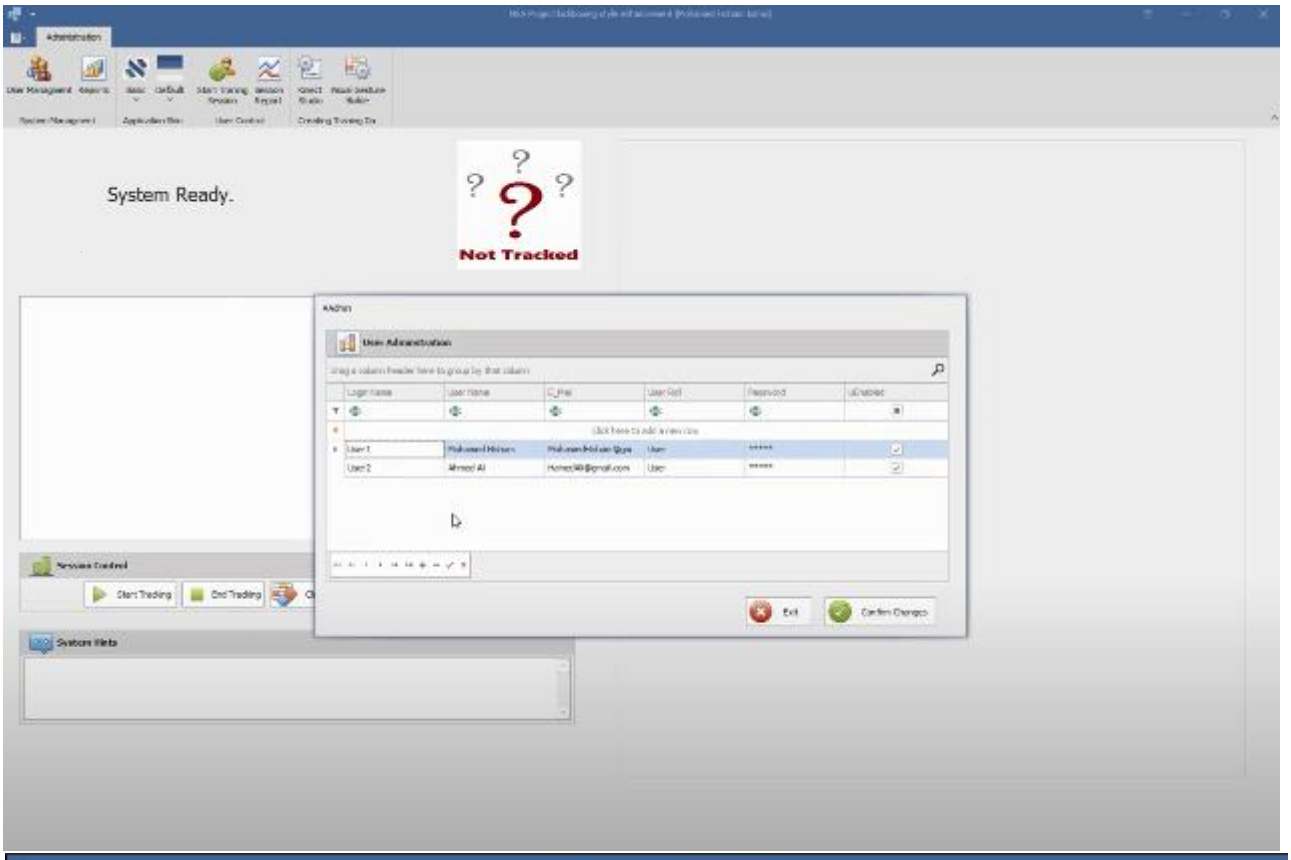
6 Human Interface Design

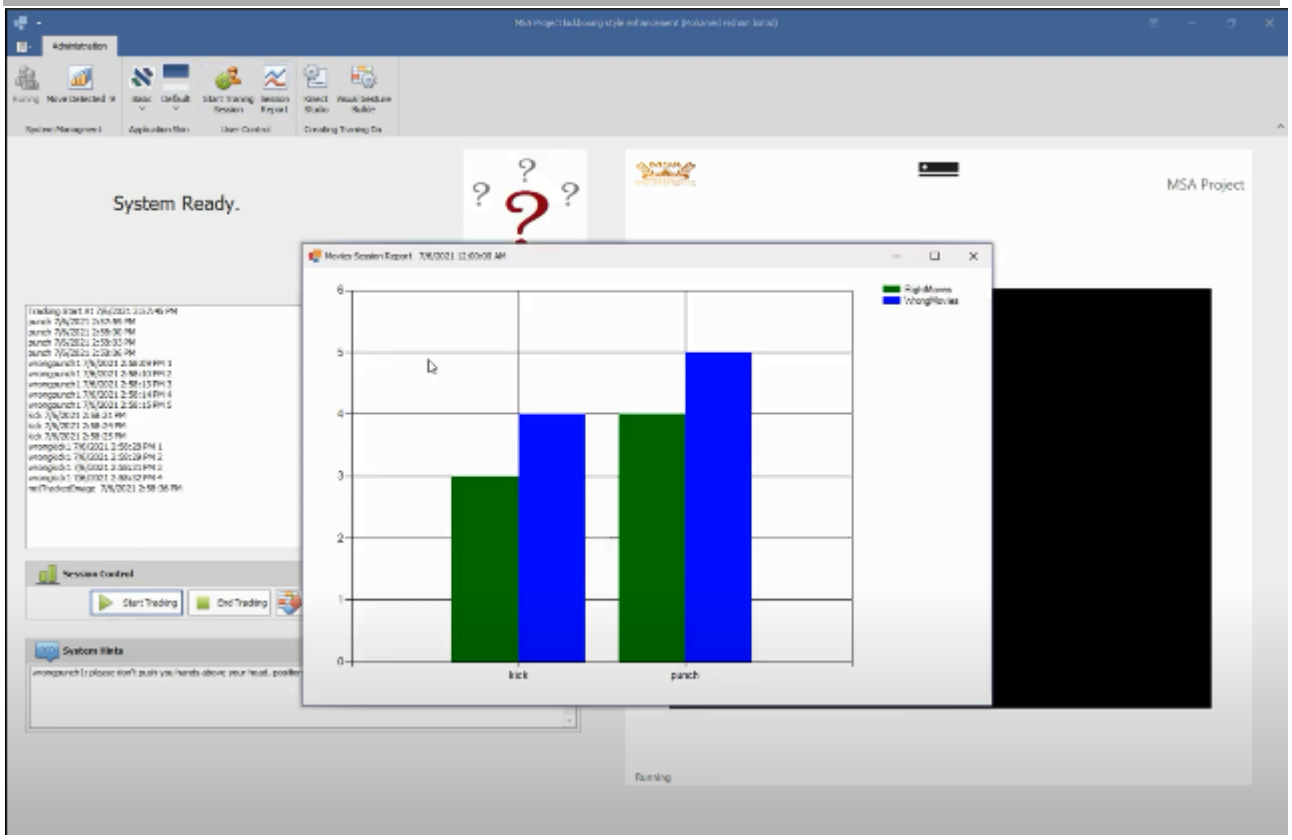
6.1 Overview of User Interface

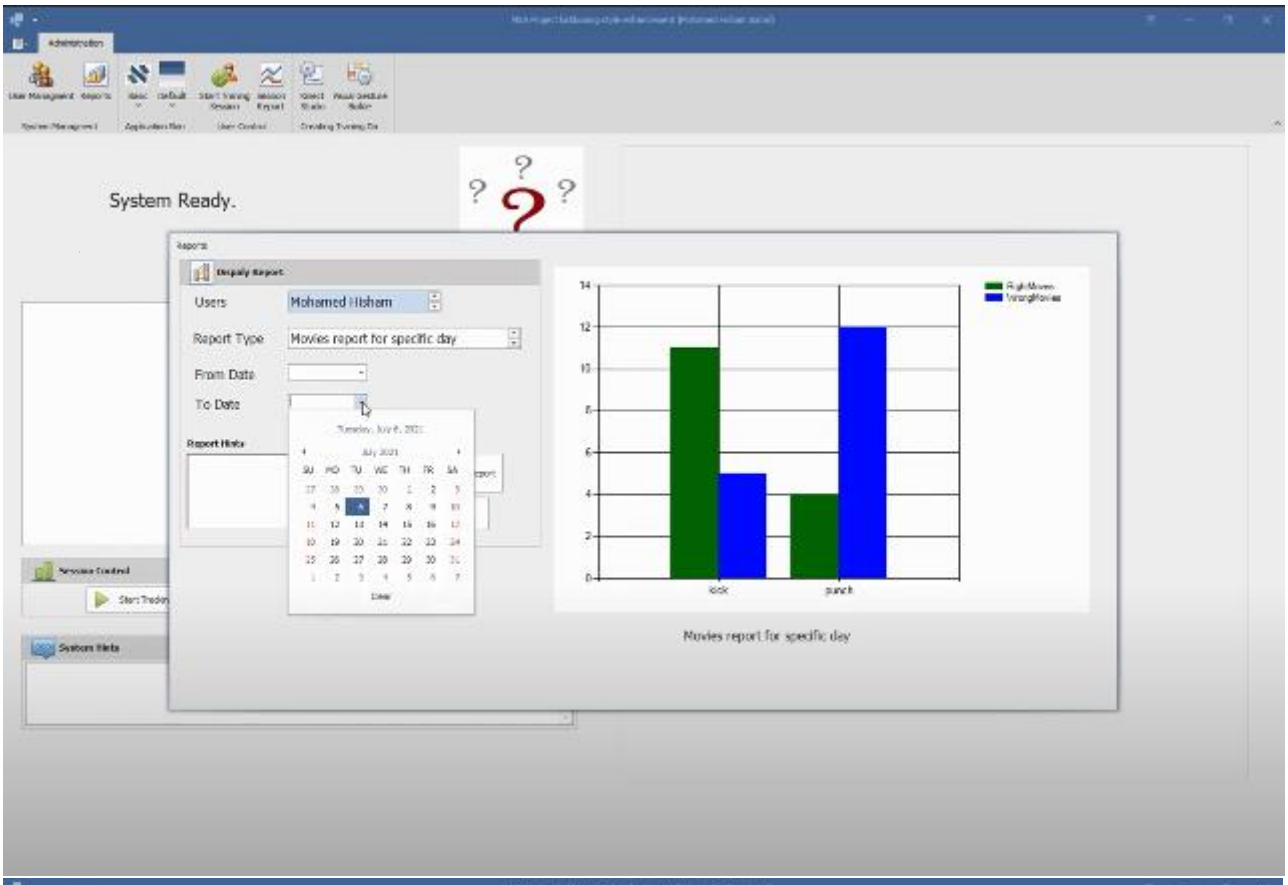
My project will make the user insert new move, which will be helpful for the user and the coach, by making the student study the moves alone in home, and also give's real-time feedback which will be helpful for the student to now if his right or wrong. My program is mostly for learning kickboxing via Kinect cam 2.0 or higher.

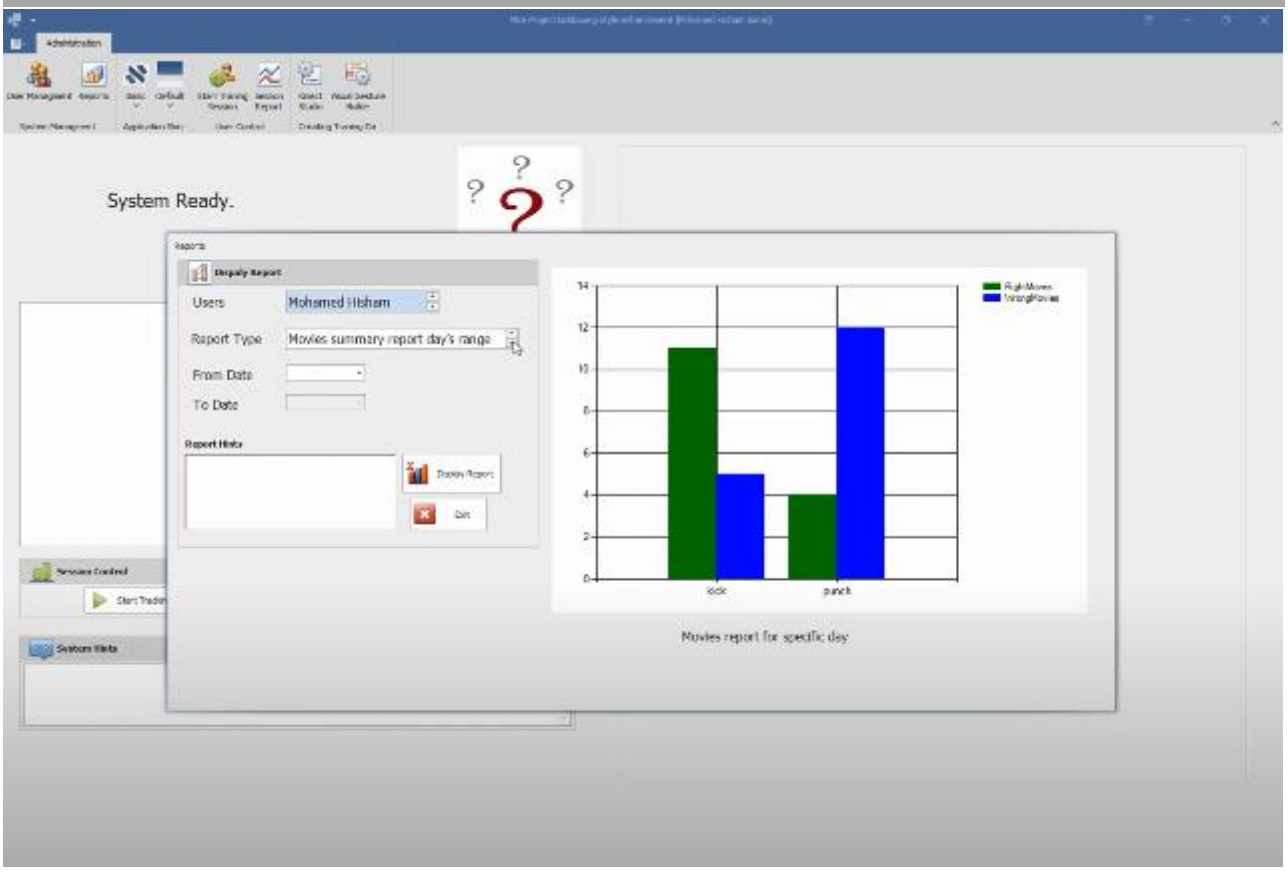
6.2 Screen Images

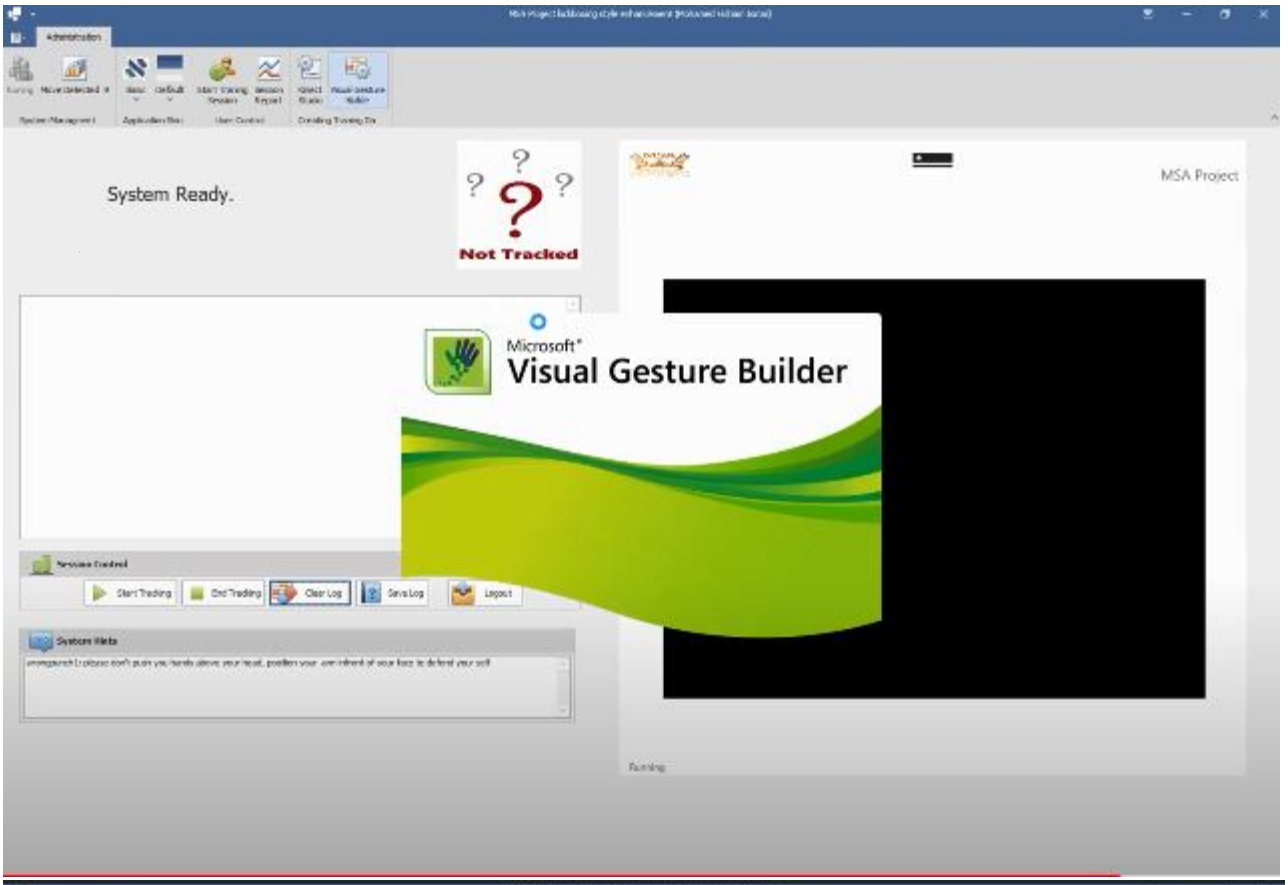


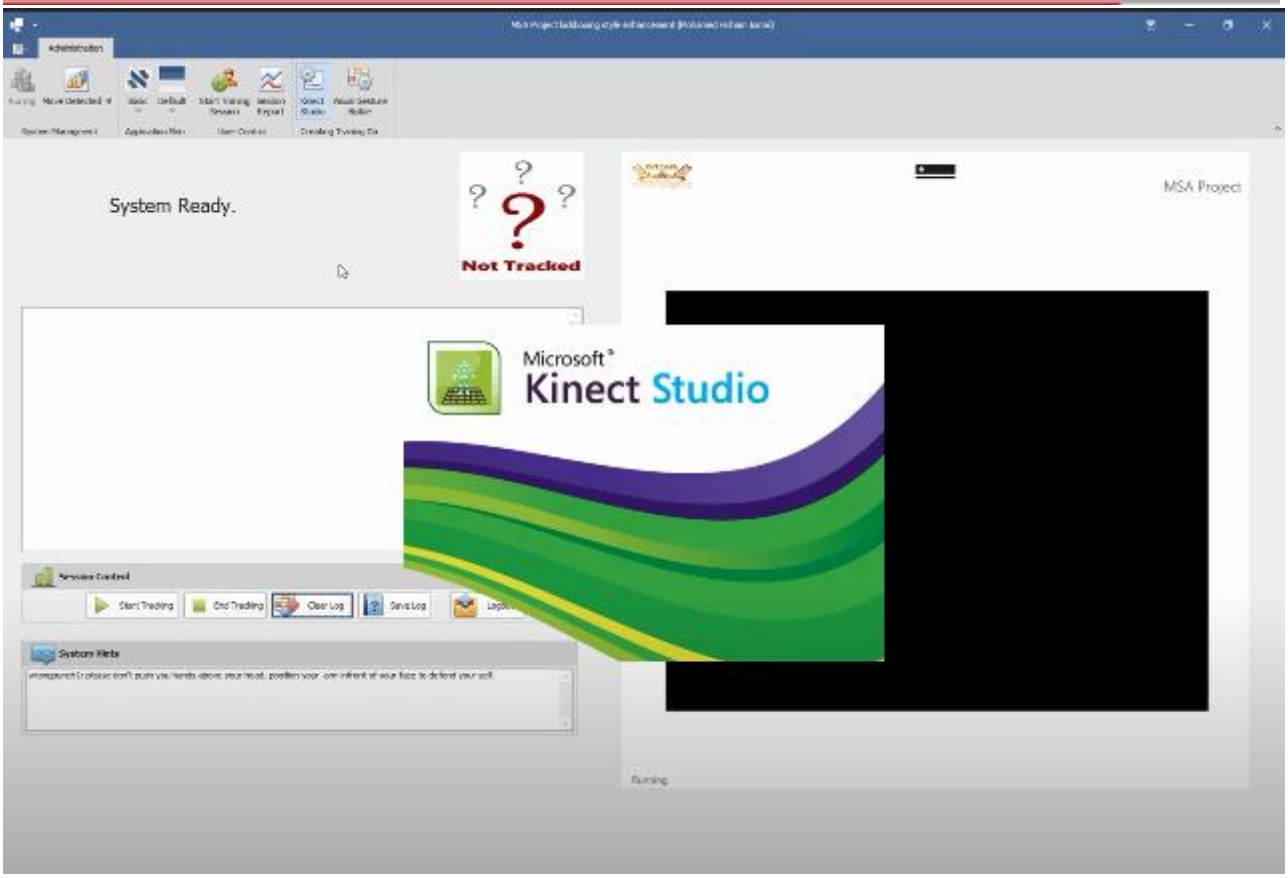

System Ready.
Not Tracked
User Administration
Exit
Confirm Changes
Start Training
End Training

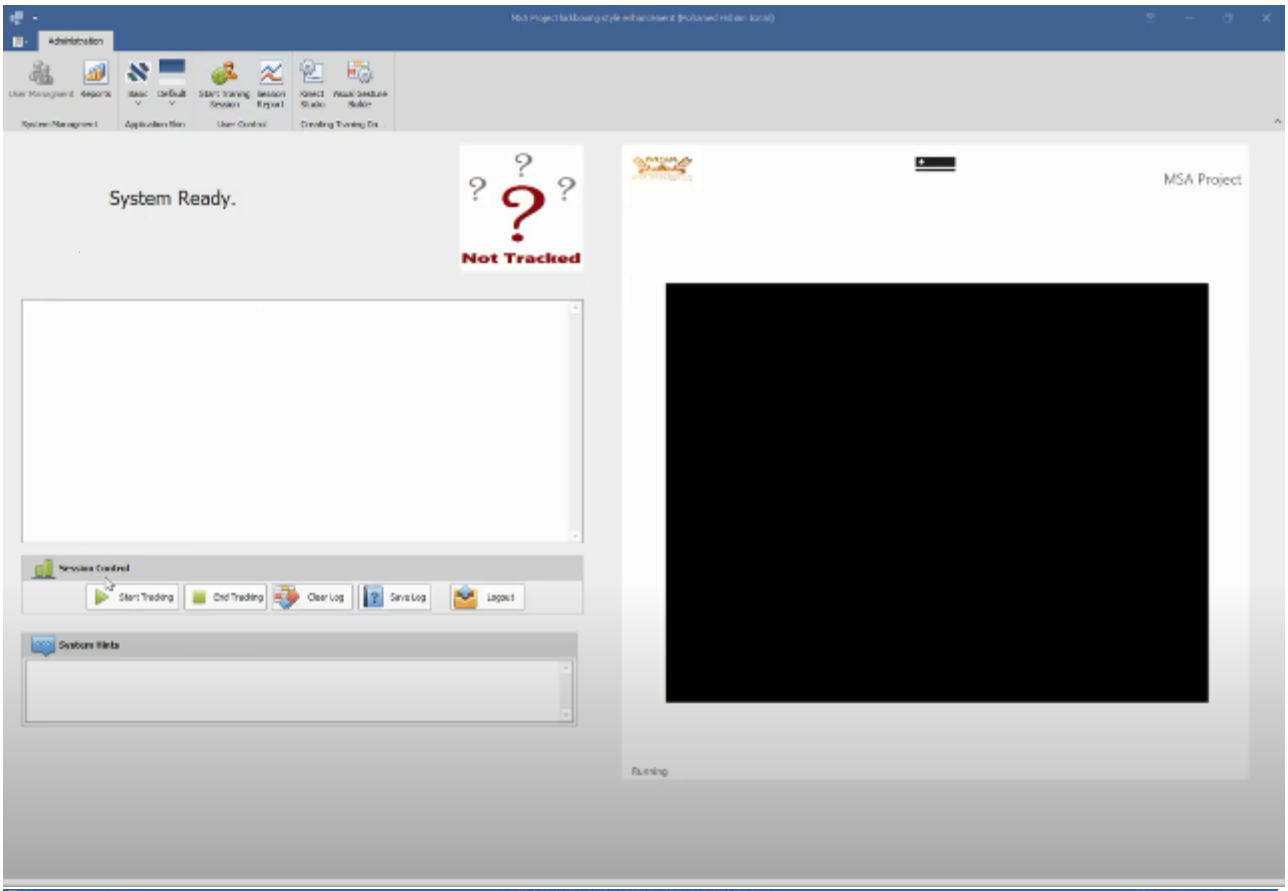

System Ready.
MSA Project
Movies Session Report
RightMovies
WrongMovies
kick
punch
Start Training
End Training

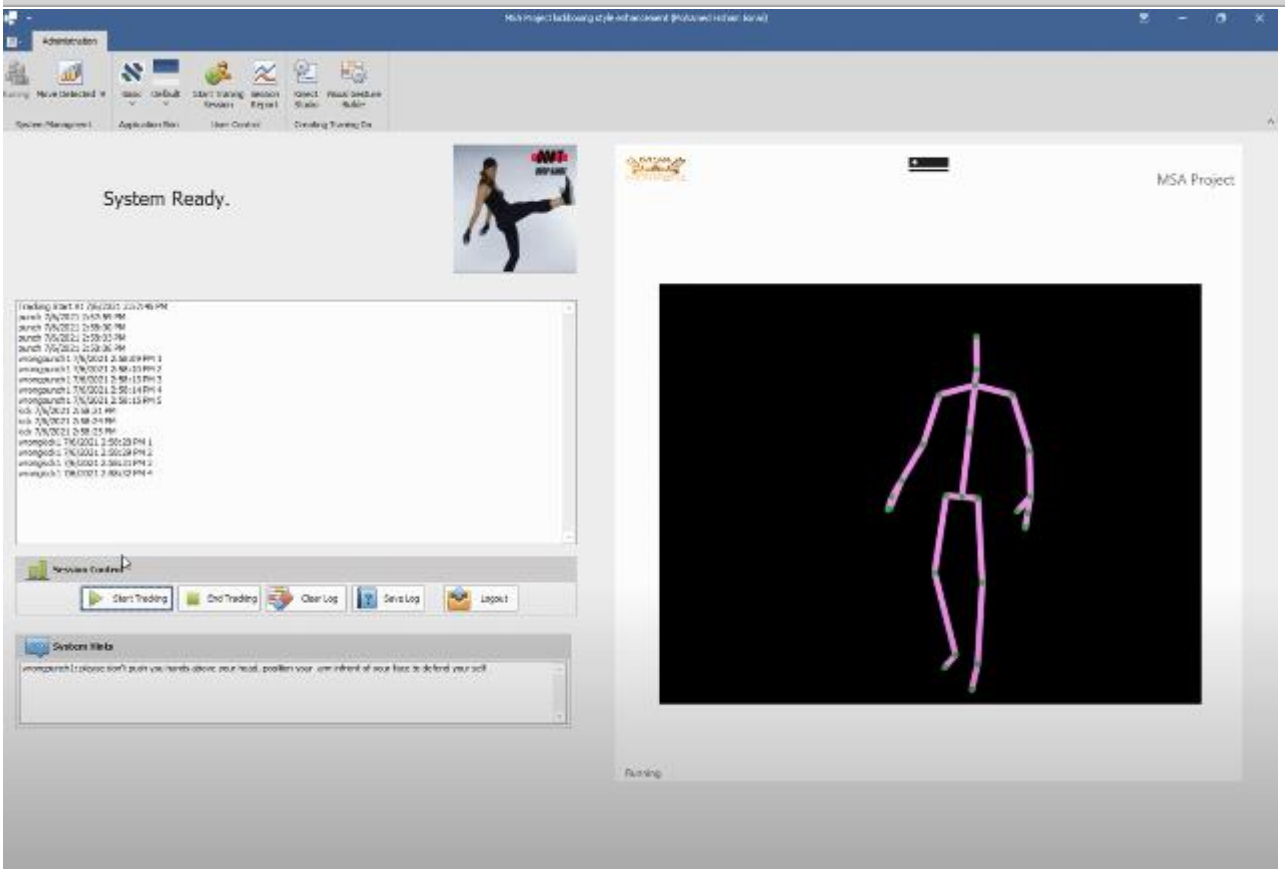

System Ready.
Users
Mohamed Hisham
Report Type
Movies report for specific day
From Date
To Date
Report Hints
kick
punch
Movies report for specific day

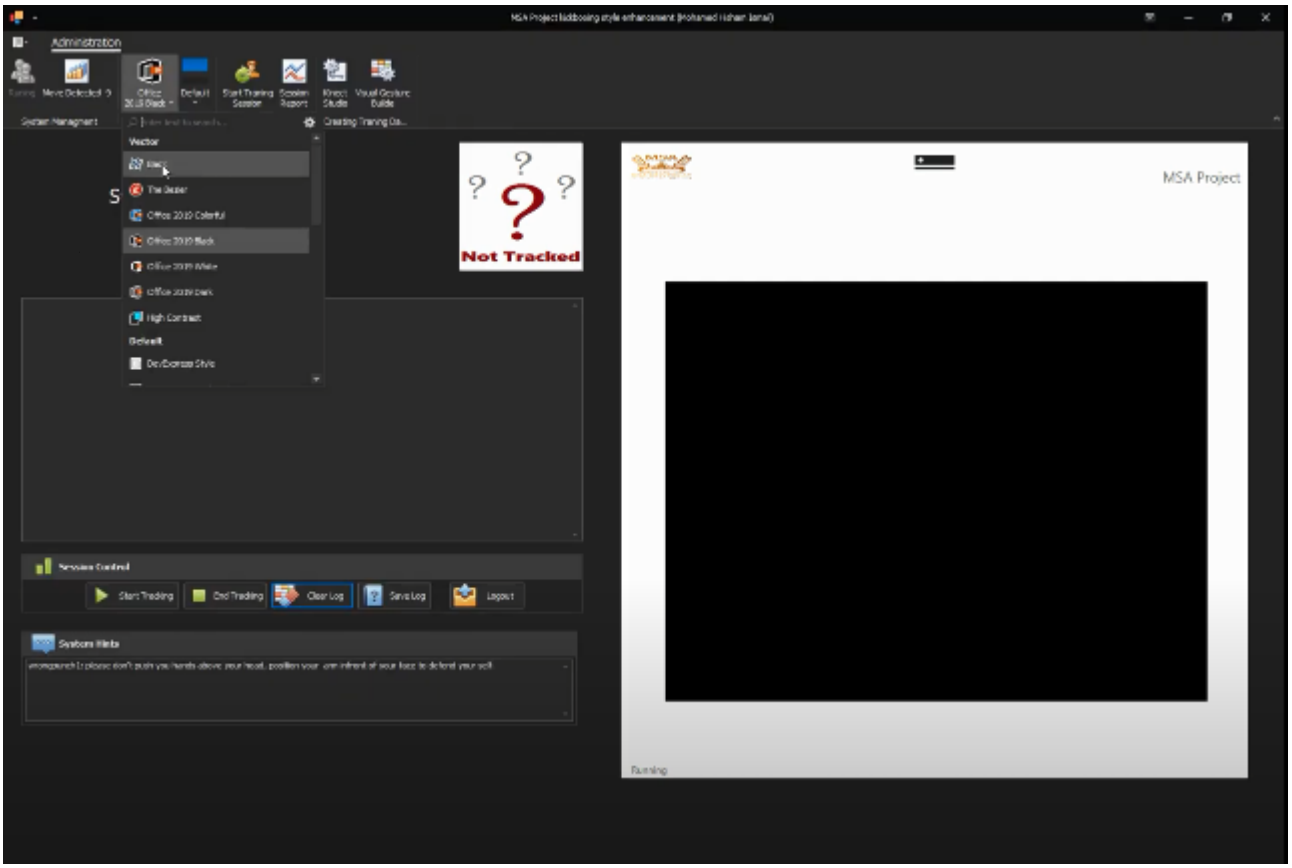

System Ready.
Users
Mohamed Hisham
Report Type
Movies summary report day's range
From Date
To Date
Report Hints
kick
punch
Movies report for specific day

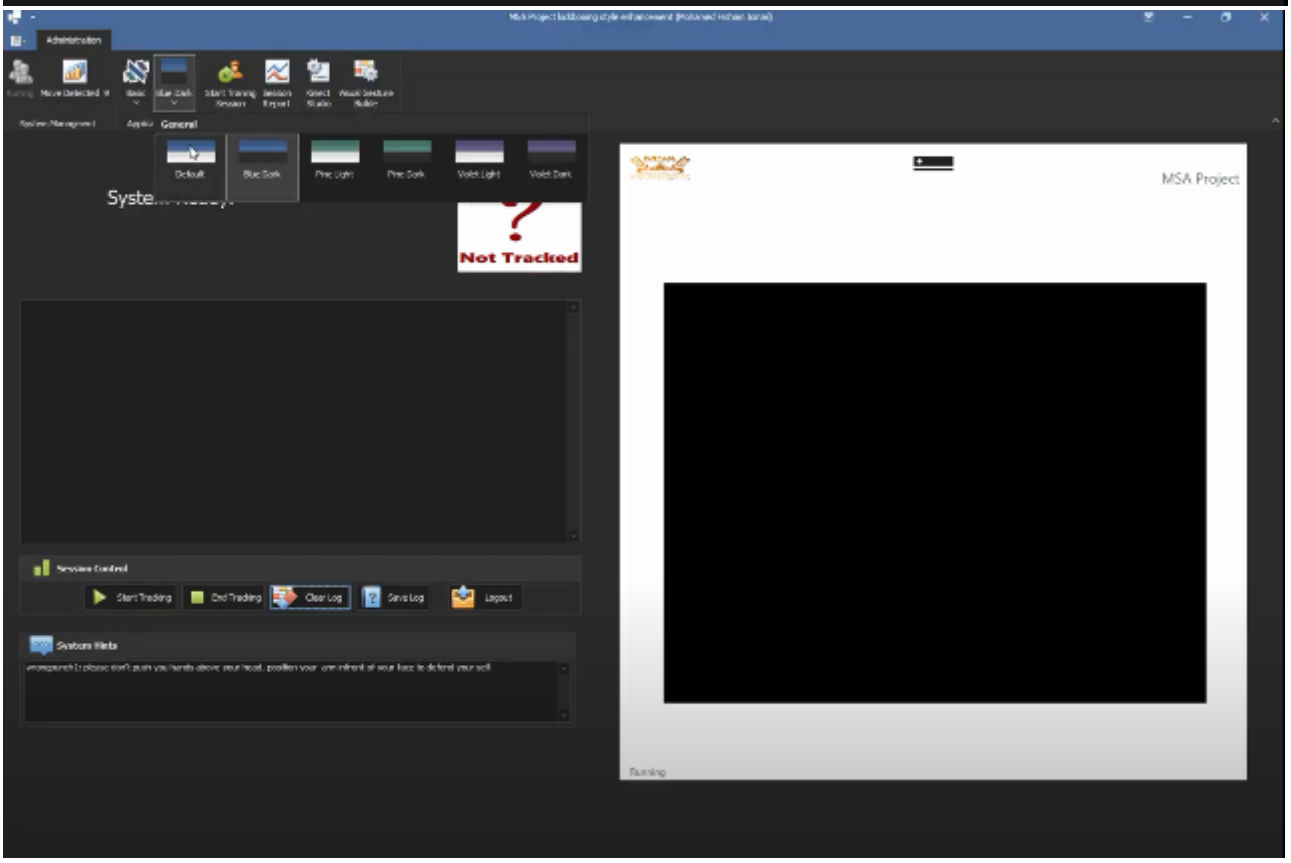

Administration
System Ready.
Not Tracked
MSA Project
Microsoft
Visual Gesture Builder
Session Control
Start Tracking
End Tracking
Clear Log
Save Log
Logout
System Meta

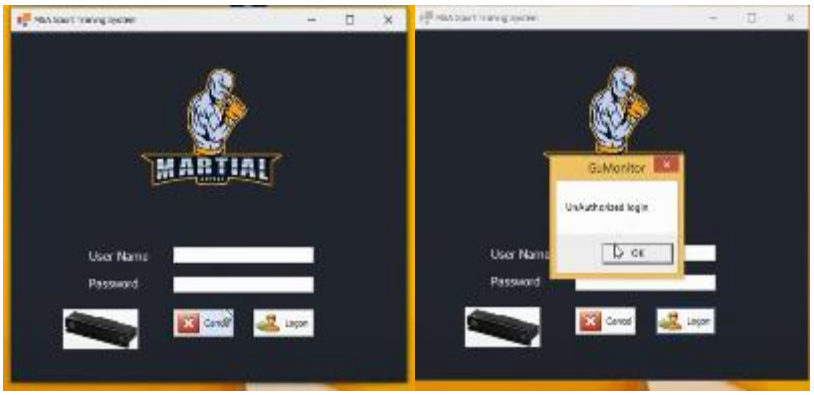

Administration
System Ready.
Not Tracked
MSA Project
Microsoft
Kinect Studio
Session Control
Start Tracking
End Tracking
Clear Log
Save Log
System Meta


Administration
System Ready.
Not Tracked
MSA Project
Session Control
Start Tracking
End Tracking
Clear Log
Save Log
Logout
System Hints
Running


Administration
System Ready.
MSA Project
Start Tracking
End Tracking
Clear Log
Save Log
Logout
System Hints
Running


Administration
Not Tracked
MSA Project


Administration
Not Tracked
MSA Project



7 Requirements Matrix

Table 8. Requirements matrix

Req no	Req description	Test case id	Status
1	The user enters new move	Insert move	Insert new move -test passed
2	Login to application	Login	User interface-test pass
3	Creating a new account	Register	Creating account-test passed
4	Try move from the database	Test move	Try move – test passed

	Register	Log in	Insert Move	Test Move
Register				
Log in				
Insert Move				
Test Move				

Chapter 4

Evaluation of the proposed system

In this survey we have discovered that the responses that came from the users who used the application are mostly positive, in the charts below we can see the users feedback on different aspects of the application.

1. Feedback from users.

Figure 8. Survey

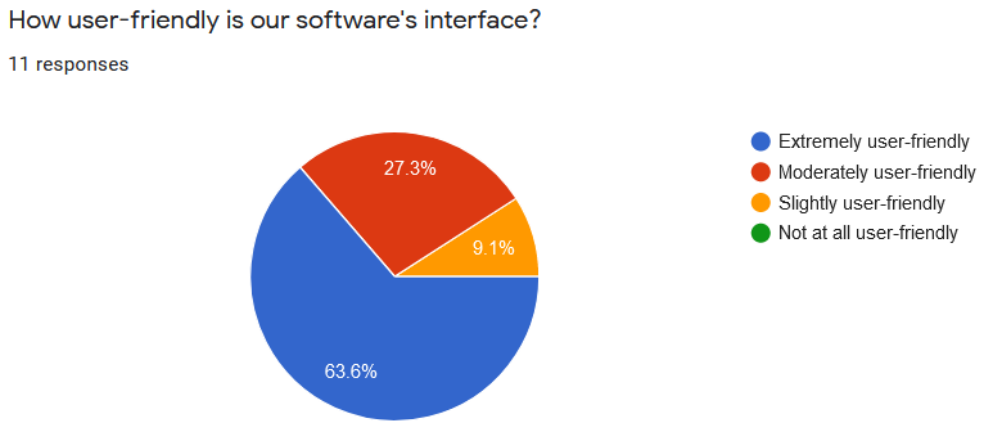


Figure 9. Survey

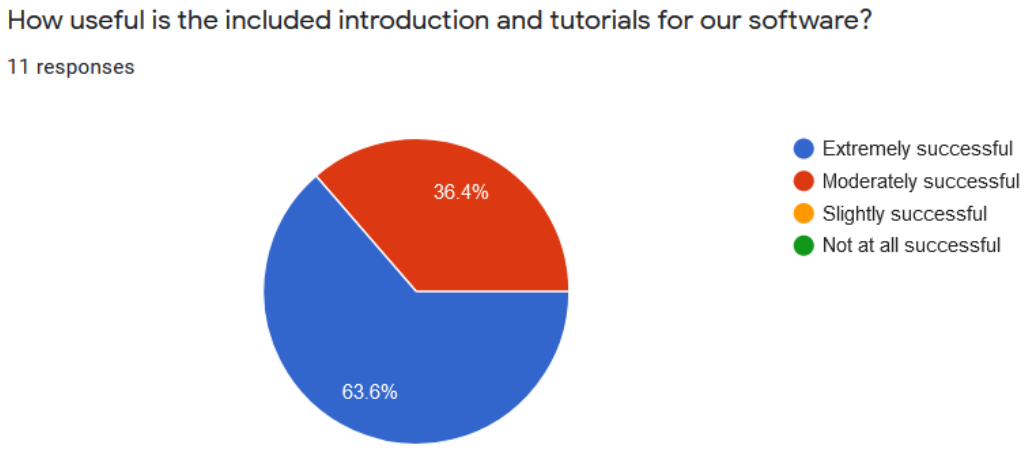


Figure 10. Survey

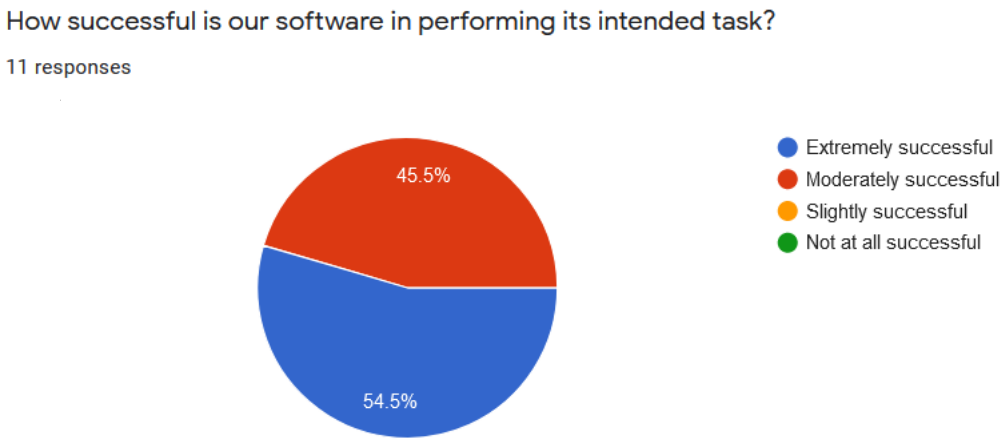


Figure 11. Survey

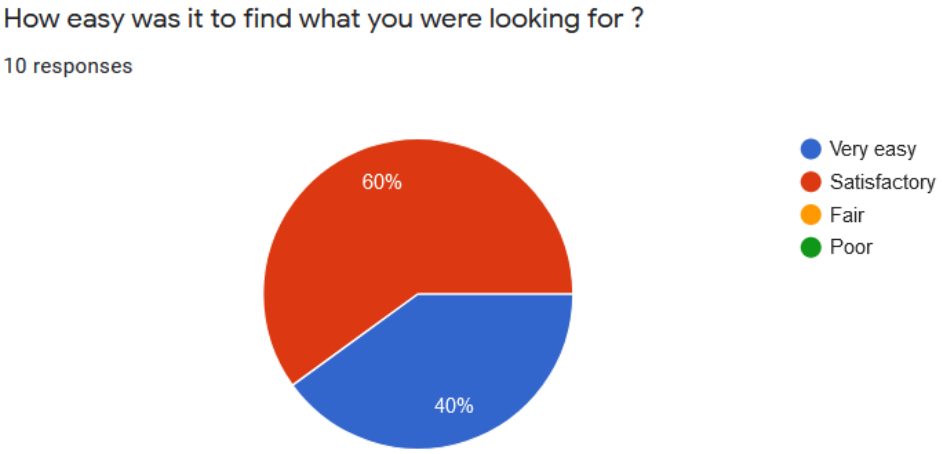


Figure 12. Survey

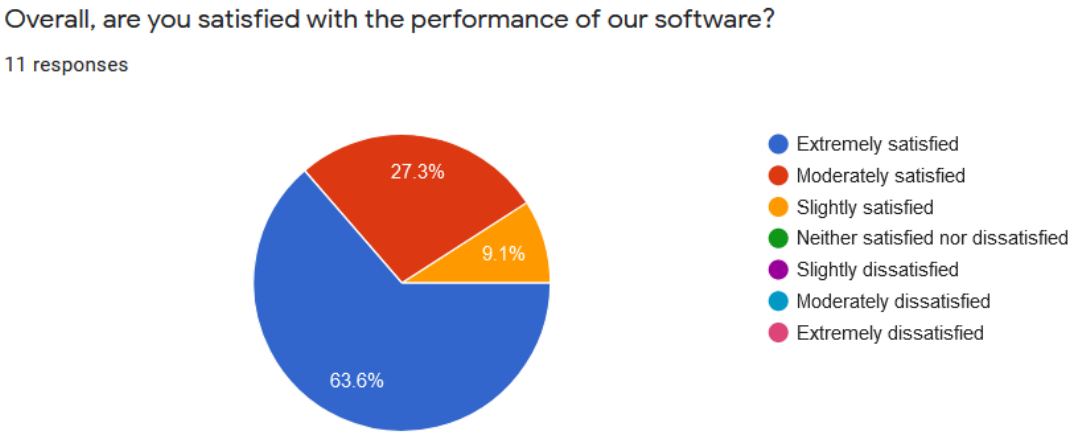


Figure 13. Survey

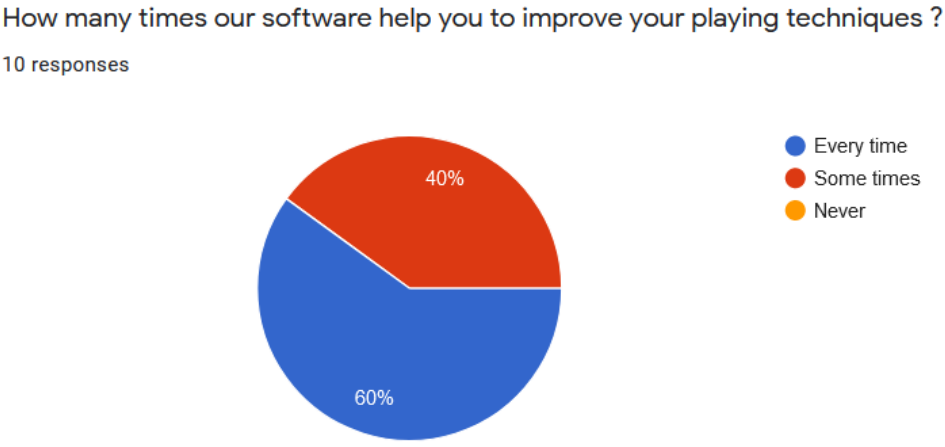
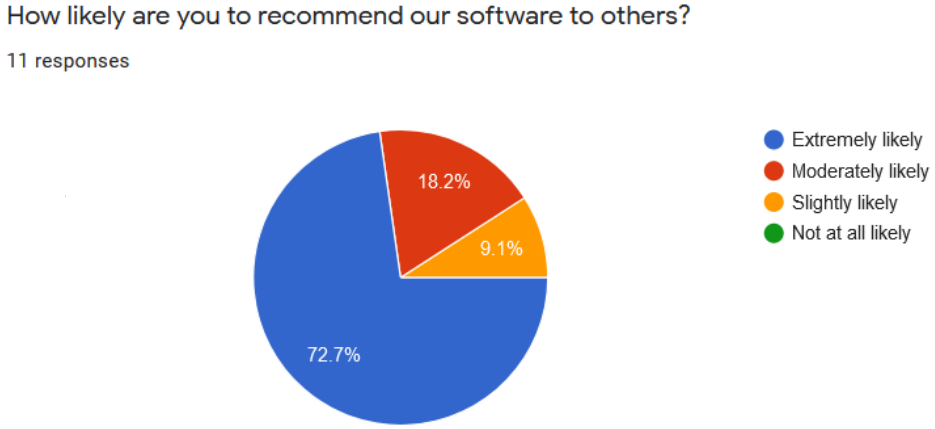


Figure 14. Survey

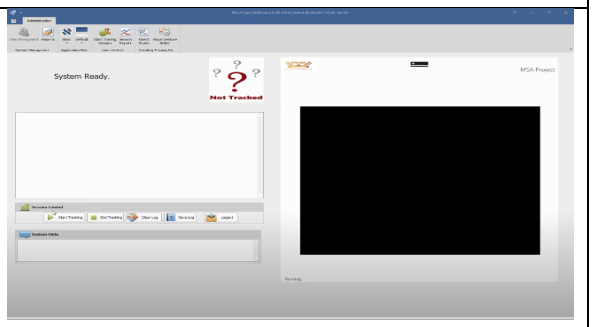


2. Unit testing

2.1 Test case: Register

Test _ ID	Tc_0
Test Scenario	Register
Test case Description	admin must enter name, username, roll , valid email address, password
Pre-requisites	User must enter all data
Test input	User must enter all data
Execution Steps	1- user enter all data in fields 2- click on confirm
Expected Behavior	Message will be display if any of these data are empty or ……. “ ”
Assumptions	The GUI design will be tested in a separate test scenario
Actual Result	
Status	Tested

2.2 Test Case 1: Login

Test _ ID	Tc_1
Test Scenario	Successful login
Test case Description	Login successfully
Pre-requisites	User have to be register and have a valid account
Test input	1-username: …… 2-Password: ……..
Execution Steps	1-user enter username 2- user enter password 3-Click Login Button
Expected Behavior	System allow user to show home page
Assumptions	The GUI design will be tested in a separate test scenario
Actual Result	
Status	Tested

2.3 Test case: Click on login without enter user name and password

Test _ ID	Tc_2
Test Scenario	Login
Test case Description	Missing username and password
Pre-requisites	----------
Test input	----------
Execution Steps	1-user Leave username and password field empty 2- user click login Button
Expected Behavior	-the system shows to the user a message “unauthorized ”
Assumptions	The GUI design will be tested in a separate test scenario
Actual Result	

2.4 Test case: Type in user name and nothing at password

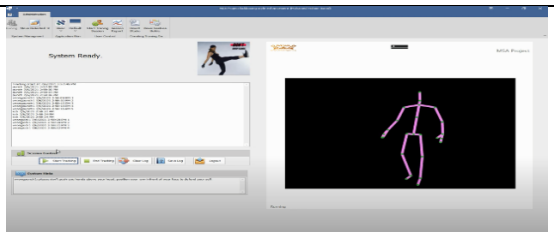
Test _ ID	Tc_3
Test Scenario	Login
Test case Description	Enter email and nothing for password
Pre-requisites	User must enter valid email and nothing for password
Test input	username: Password:
Execution Steps	1-user enter username 2-user make password empty 3-click Login button
Expected Behavior	Message will be displayed above password box says “unauthorized login”
Assumptions	The GUI design will be tested in a separate test scenario
Actual Result	
Status	Tested

2.5 Test case: Type in password and nothing for username

Test _ ID	Tc_4
Test Scenario	Login
Test case Description	Enter password without username
Pre-requisites	User must enter password without username
Test input	Username: …… Password: ……..
Execution Steps	1-user enter password and make the username field empty 2-click on login button
Expected Behavior	Message will be displayed on email field says “unauthorized login”
Assumptions	The GUI design will be tested in a separate test scenario
Actual Result	

2.6 Test case: test move

Test _ ID	Tc_5
Test Scenario	Test move
Test case Description	1. the user clicks in **start training session** 2. a window will open showing his body 3. the user click on **start tracking button** 4. the log will start to get **filled** while his testing the move with **information** 5. the **hint** log section will start to get filled if their a wrong move detected
Pre-requisites	1. user must click on start training session 2. user must click on start tracking button
Test input	Data will appear showing his right and wrong moves with hint of how to execute a right move if a wrong move got detected
Execution Steps	1. the user click in start session 2. the user click on start tracking for log to be filled with information 3. the user stands in front of the sensor/cam
Expected Behavior	The screen will show his body movement, and the log will get filled, and also the hint section will get filled

Actual Result	
Status	Tested

3. Integration testing

Relationship between username and password in the login page must be valid to show the main page. The relationship between start session, and start tracking must be both clicked to show information about the session in the log section in the main page, and also the hint section in the main page. The relationship between start sessions, start tracking, and save log must be clicked to save the session to show the offline report or the historical report (bar chart). The relationship between the login in page, and add user there must be a user inserted to login with.

4. System testing

- System can start without failure in all activities.
- Admin should register the user to the system.
- User should log into the system.
- User can view his reports
- User can see live feedback while training
- Admin can view all report of the users
- Users can only see their reports

5. The main important functionality:

1. Login
2. Add users
3. Start tracking
4. End tracking
5. Clear log
6. Save log
7. View report
8. View session report

Chapter 5

1. Conclusion

In this document we proposed a system that makes user study martial art at home a very modern approach in learning and correcting, posture, body motion using Kinect cam to receive real-time response to help the player exercise safely. ,studying alone without a professional guider or trainer can led to severe muscle injuries, we are not saying you can't study alone, but you must understand what you're doing well to avoid severe muscle injuries and it can lead to bad habits. Therefore, learning the proper body motion, and posture of this sport is important for your safety.

2. Future directions

We look forward to adding more techniques like hook, side kick, upper cut and more to correct it to the user, and also our aim is to make the system available to all types of martial arts not only kick-boxing but we are not saying that the system is not already that we only need to insert some dataset to achieve this goal, but also many martial arts types.

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