

**VIVEKANAND EDUCATION SOCIETY'S INSTITUTE OF  
TECHNOLOGY Department of Computer Engineering**



**Mini Project Report on  
MindCanvas**

In partial fulfillment of the Third Year, Bachelor of Engineering (T.E.) Degree in  
Computer Engineering at the University of Mumbai Academic Year 2018-2019

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(2018-19)

**VIVEKANAND EDUCATION SOCIETY'S**  
**INSTITUTE OF TECHNOLOGY**  
**Department of Computer Engineering**



**Certificate**

This is to certify that Ketaki Buwa, Chinmay Joshi, Faizanshah Ansari and Rahul Gurnani of Third Year Computer Engineering studying under the University of Mumbai have satisfactorily completed the mini project on "*MindCanvas*" as a part of their coursework of MINI PROJECT for Semester-VI under the guidance of their mentor **Prof. Indu Dokare** in the year 2018-2019 .

Date:

Project Guide:

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# **Mini Project Report Approval**

## **For T. E (Computer Engineering)**

This mini project report entitled MindCanvas by Ketaki Buwa, Chinmay Joshi, Faizanshah Ansari and Rahul Gurnani is approved for the Third Year of Computer Engineering

Internal Examiner

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External Examiner

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Head of the Department

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Principal

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Date:

# **Declaration**

We declare that this written submission represents our ideas in our own words and where others' ideas or words have been included, we have adequately cited and referenced the original sources. We also declare that we have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in our submission. We understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

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Date:

## **ACKNOWLEDGEMENT**

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We wish to express our profound thanks to all those who helped us in gathering information about the project. Our families too have provided moral support and encouragement at several times.

# **LAB OUTCOMES FOR T.E PROJECT**

Learners will be to,

## **Lab Outcome Description of the Lab Outcome**

<b>Lab Outcome</b>	<b>Description of the Lab Outcome</b>
LO1	Acquire practical knowledge within the chosen area of technology for project development.
LO2	Identify, analyze, formulate and handle programming projects a comprehensive systematic approach
LO3	Contribute as an individual or in a team in development of technical projects
LO4	Develop effective communication skills for presentation of project related activities

<b>Lab Outcome</b>	<b>Overall Grades</b>
<b>LO1, LO2, LO3, LO4</b>	

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## **Abstract**

India is a vast country with a population of 1.2 billion people where at least five crore people live with a mental illness and most of them are even unaware of it, the reason being currently there are less than 4000 psychiatrists in India and visiting a psychiatrist is believed to be a stigma. On the other hand, a search on a Global scale for “Human Resource Management” on LinkedIn shows around 4 million results in an employed population of 4 billion people, Even if we assume that the quantity is enough, “Quantity” can never assure us of “Quality”. In both cases, the most important part of the Human Resource - “The Brain” could be misjudged.

Thus, for having an unbiased judgment that is equally reachable to all the proposed system which looks like a Game but does your “Psych-Analysis” behind the scenes using the powers given by Image processing and Machine Learning on behavioral analysis. The application makes use of a game module (based on anagrams) to analyze the mental state, pressure-bearing and task completion capabilities of a person in a variable situation. It can be used by the psychiatrists for measuring patience and mental balance, HR Managers for judging task efficiency, Online Websites for user character analysis. This project makes use of the latest tools available in the field of Machine Learning (ML).

# Chapter 1

# Introduction

## **1.1 Introduction**

India is a vast country with a population of 1.2 billion people where at least five crore people live with a mental illness and most of them are even unaware of it, reason being currently there are less than 4000 psychiatrists in India and visiting a psychiatrist is believed to be a stigma. On the other hand, a search on a Global scale for “Human Resource Management” on LinkedIn shows around 4 million results in an employed population of 4 billion people, Even if we assume that the quantity is enough, “Quantity” can never assure us of “Quality”. In both the cases, the most important part of the Human Resource - “The Brain” could be misjudged. Thus, for having an unbiased judgment that is equally reachable to all we proposed a System which looks like a Game but does your “Psychoanalysis” behind the scenes using the powers given by Image processing and Machine Learning on behavioral analysis.

## **1.2 Motivation**

In an ever growing country like ours, the mental state and psych of a person at any given point of time plays a vital role. There are many activities an average person performs where he is subjected to variable stressful and changing environments. We aim to develop an application that will help one analyse his performance in such conditions. Currently, there are not sufficient systems which majorly focus on this kind of objectives. We felt the need to make one such system that will do the psychoanalysis of people whose results can be used in other fields where the evaluation criteria is such.

## **1.3 Problem Definition**

The application developed will make use of a game module to analyze the mental state, pressure-bearing and task completion capabilities of a person in a variable situation. Subjects will have to play a game based on anagrams. In the background, the facial expressions and mouse gestures of the person will be recorded and used to analyse his/her mental state when he/she is subjected to stressful and variable environments. At the end of the game, the person will be shown his/her analysis performed with the help of above two parameters.

## **1.4 Relevance of the project**

Our application does the mental state evaluation and psychoanalysis of a person when subjected to changing environments as mentioned above. This can be used in various fields which require the mental state of a person and his capabilities in such situations as a parameter for some other evaluations. Some of the areas where this can be used are Pilot Screening tests, Detection of suicidal tendencies, Army recruitment tests, Evaluation of Emotional Quotient(EQ), Psychoanalysis in mental asylums. There are many other fields which can make use of this model for similar aspects.

## **1.5 Methodology employed for the Project.**

We have used the incremental model for our application. Incremental development is based on the idea of developing an initial implementation, exposing this to user feedback, and evolving it through several versions until an acceptable system has been developed. The activities of a process are not separated but interleaved with feedback involved across those activities. Each system increment reflects a piece of the functionality that is needed by the customer. Generally, the early increments of the system should include the most important or most urgently required functionality. This means that the customer can evaluate the system at early stage in the development to see if it delivers what's required. If not, then only the current increment has to be changed and, possibly, new functionality defined for later increments.

# **CHAPTER 2**

# **LITERATURE**

# **SURVEY**

## **2.1 Papers**

### **1.Facial Emotion Recognition.**

**Authors:** Xiaoxi, Lin Weisi ,Huang Dongyan, Dong Minghui, Haizhou Li .

#### **Description:**

IEEE 2nd International Conference

On Signal and Image Processing.

This paper mainly focuses on different learning methods, and has implemented several methods. Support Vector Machine (SVM) and Deep Boltzmann Machine (DBM) for facial emotion recognition.

### **2.Perceived work deadlines.**

**Authors:** Anand Rao and Neelima Pradhan

#### **Description:**

Work deadlines acts as one of the sources of stress that may lead to cause some dysfunctional consequences to the individual as well as to the organizations. The present study was undertaken to examine the influence of personality on perceived work deadlines among software professionals

### **3.State-Trait Anxiety Inventory**

**Authors:** Charles R. Harrell, Bruce Gladwin, Michael P. Hoag.

#### **Description:**

An emotional state exists at a given moment in time and at a particular level of intensity. Anxiety states are characterized by subjective feelings of tension, apprehension, nervousness, and worry, and by activation or arousal of the autonomic nervous system.

# **CHAPTER 3**

# **REQUIREMENT**

# **GATHERING**

### **3.1 Definition**

In requirements engineering, Requirements Gathering is the practice of researching and discovering the requirements of a system from users, customers, and other stakeholders. This practice is also sometimes referred to as "requirement elicitation." Usually, analysis and specification of the requirements follow requirement gathering.

### **3.2 Functional Requirements**

1. Software shall display a set of Instructions before starting MindCanvas's evaluation process.
2. A game module shall abstract the whole process. The concept of anagrams shall be used to design the game that shall focus on increasing the player's vocabulary skills.
3. The game module shall properly utilize visual and audio effects to maximize the throughput of the evaluation by creating different scenarios for the user to play within.
4. Software shall consist of an Expression capture control and analyze module (ECCAM) to handle the feed from the camera input and give an appropriately processed output.
5. Software shall consist of a mouse motion control and analyze module (MMCAM) to set the default speed of the mouse and analyze mouse actions during the gameplay.
6. Software shall consist of a trained machine model based on k-means algorithm to generate behavioral clusters based on accuracy and consistency.
7. Software shall contain a function to generate a score for each of the obtained clusters to rank them in decreasing order of accuracy and consistency.
8. Software shall contain a result card that displays the end result of players evaluation in a pictorial form.

### **3.3 Non-Functional Requirements**

1. The player shall grant access to the software for its webcam.
2. A cold start of the game module shall take around 35 seconds and a hot start no more than 32 seconds.

3. Time allocated for Normal Gameplay and Task Performance shall be divided such that tasks occur only at specific instances and for a limited amount of time.
4. Total game time shall be fixed based on the playing rate of an average gamer.
5. Expression capture control and analyze module (ECCAM) shall analyze bulk data from the captured Image Frame and produce Output in real time for best accuracy.
6. The lag between audio and visual shall be of a level such that it is not noticeable to the human brain.

### **3.4 Constraints**

- The software shall analyze only one person at a time and shall fail to work as desired if there are more people in front of the webcam.
- The software shall work only in bright and less noisy conditions.
- Usage of the software shall be limited to the people without spectacles and belonging to western countries due to the dataset limitations.

### **3.5 Selection of the Hardware, Software, Technology, and Tools**

#### **Hardware:**

- A laptop or computer running on windows that supports python 3.7: Software will be developed upon Python 3.7.
- Webcam with at least 720p resolution: Any resolution less than this will produce images that are inefficient for processing.
- Headphones with noise cancellation: Any noise in the surrounding will make it difficult for the player to hear the task instructions.

## **Software:**

- TensorFlow 1.13.1: Machine learning tool provided by Google. It will be used for training the EXPRESSION RECOGNITION MODEL.
- Tkinter 8.6: It will provide a medium to build GUI for result displays.
- cx\_Freeze 5.1.1: It will be used to generate an executable file.
- Enchant 2.0.0: It will be used to extract meaningful words out of all the permutations of a given set of letters.
- Python Imaging Library (PIL) 6.0.0: This library will be used to do manipulation on IMAGE DATA.
- Win32api 224: This API will help to interact with windows to access system functions.
- Pygame 1.9.5: This module will be base for GAME DEVELOPMENT.
- NumPy 1.14.5: It is the fundamental package for scientific computing with Python. It will be used to handle complex calculations of model training.

## **Technology :**

- Multi-Threading: It will be used to display loading status, delayed calls and much more.
- Image Processing: It will be used to do manipulation with images, Such as resizing and cropping.
- Machine Learning: It will be used to train classification and clustering models.

## **Tools:**

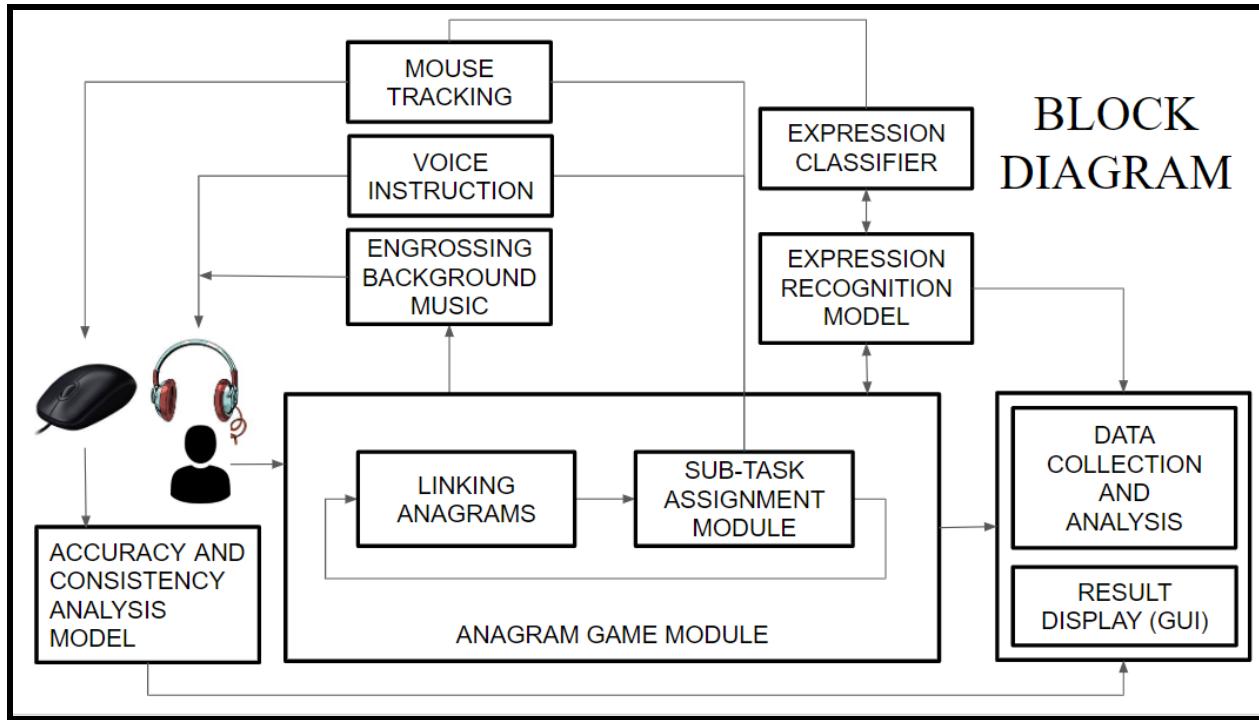
- WavePad Sound Editor v9.04: It will be used for trimming and editing sounds.
- DB Browser for SQLite Version 3.10.1: It will be used to view the contents of the database.

# **CHAPTER 4**

# **PROPOSED DESIGN**

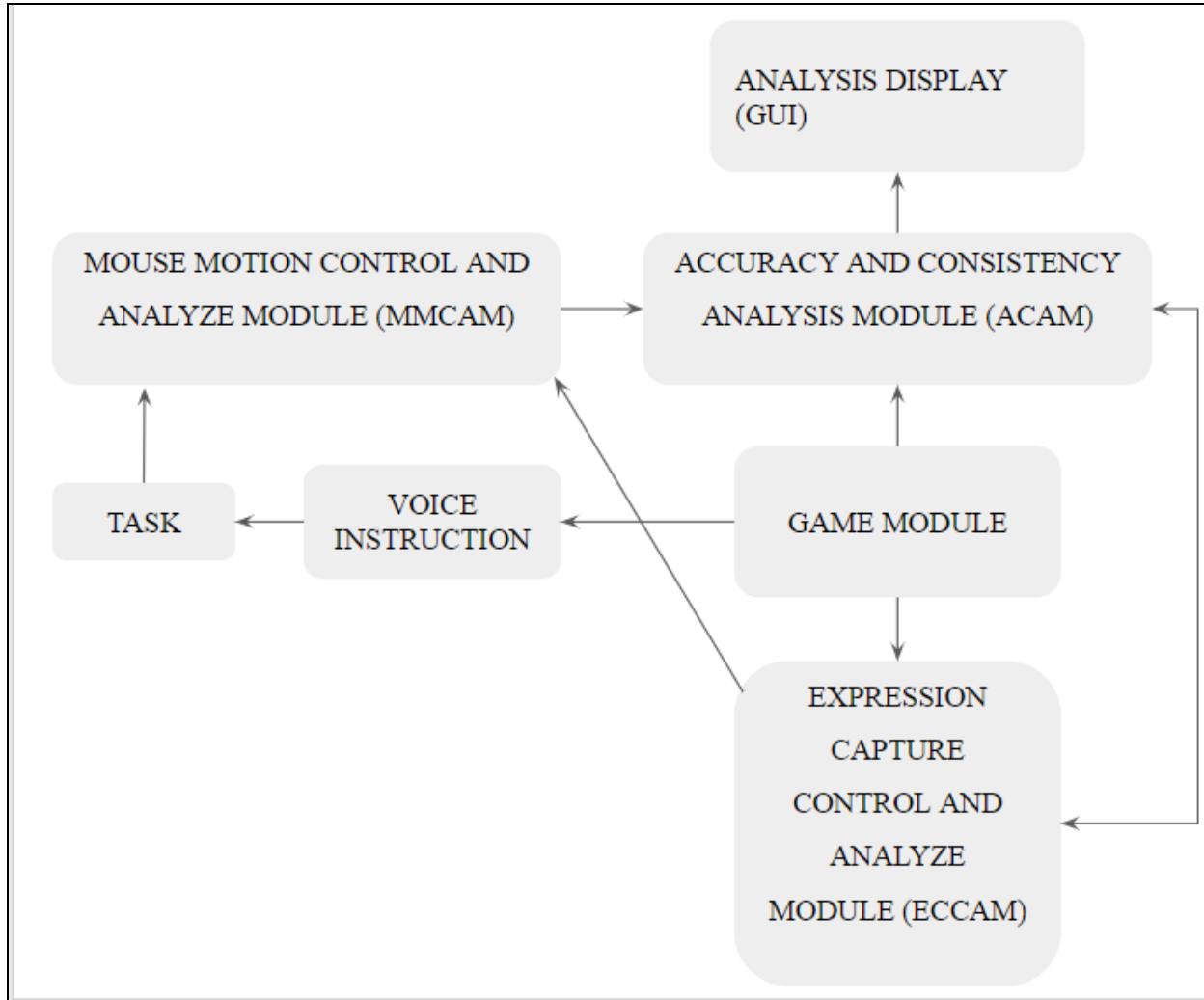
#### 4.1 Block diagram of the system

**Figure 1:** Block diagram of the system



Anagram Game Module is initialized and the player starts linking anagrams. Game Module also activates Expression Recognition Mechanism. At a specific time frame in the game, the player is provided with some tasks to perform. These tasks play a Voice Instruction before getting activated, They also activate the Mouse Tracking mechanism and player's mouse movements are captured. All this data is captured and fed for comparing to a K-Means ML Model for Accuracy and Consistency Analysis. After the analysis, the GUI displays the player's evaluation.

**Figure 2:** Modular design of the system



Game Module calls ECCAM. ECCAM signals MMCAM when Expression = “Neutral.” Game Module starts a Task. After task data goes to ACAM. ACAM collects other relevant data from the Game Module and ECCAM at the end of the game. ACAM does processing and Analysis is displayed using GUI.

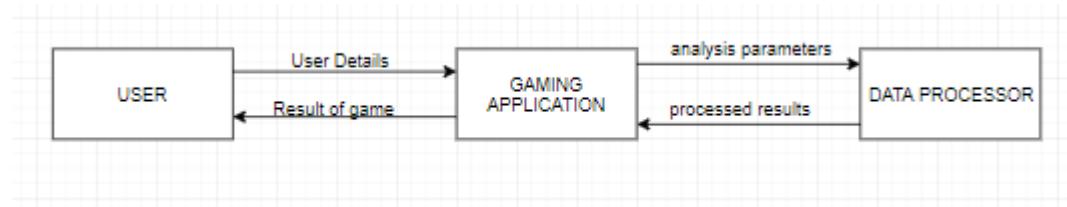
## 4.2 Detailed Design

### Data Flow Diagram:

*Level 0:*

The user interacts with the application by playing the game modul. Required details are tracked and given to analysis model. Processed details are displayed on screen

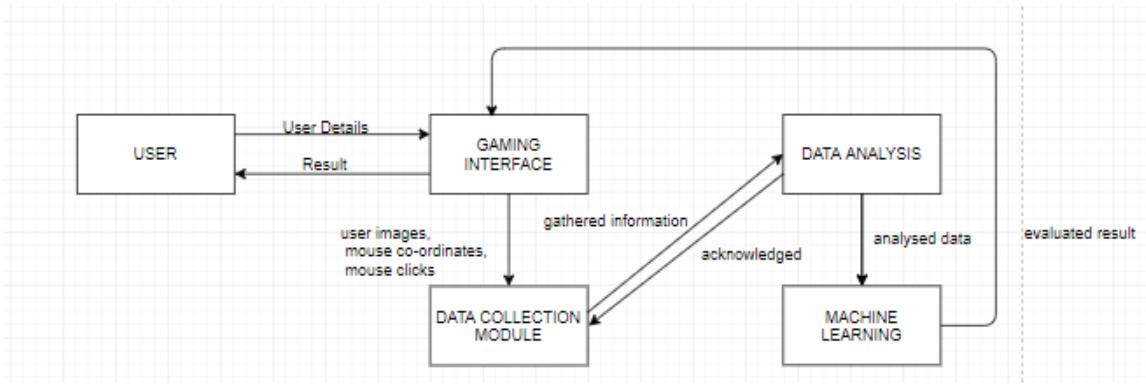
Figure 3: DFD level 0



*Level 1:*

The game module tests the concentration and efficiency on basis on facial expressions , speed of cursor movements and correct clicks. The data is collected in the background of gaming interface and is transferred for analysis as soon as the game terminates. The data analysis module analyses the data using a machine learning algorithm and displays the output on user interface.

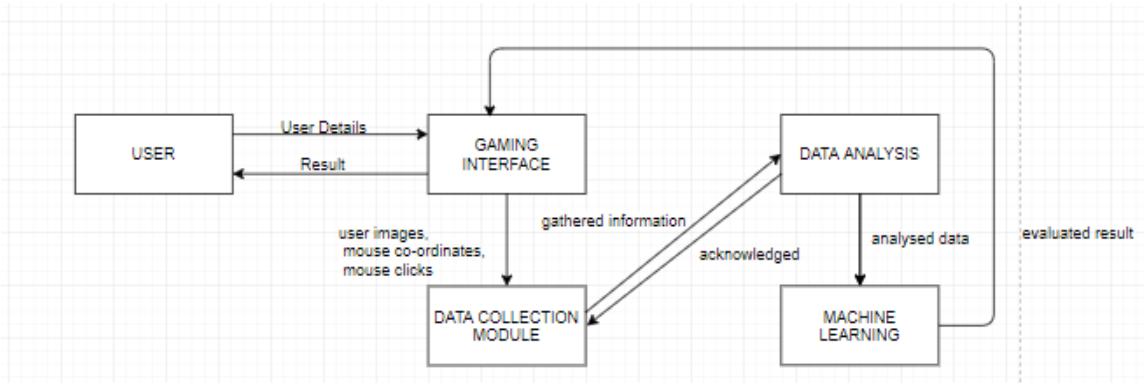
Figure 4: DFD Level 1



### Level 2:

The user enters into the game providing its details. The game module is designed in order to track the cursor movements and facial expressions of the player. Three monitoring modules namely facial expression capture, cursor speed tracking and mouse clicks tracking works in background. Once the game terminates the collected data is transferred to analysis module where the result is generated by analysing the three parameters all together. Machine learning is used to classify and plot data and produce required result which is displayed on user interface.

Figure 5: DFD Level 2



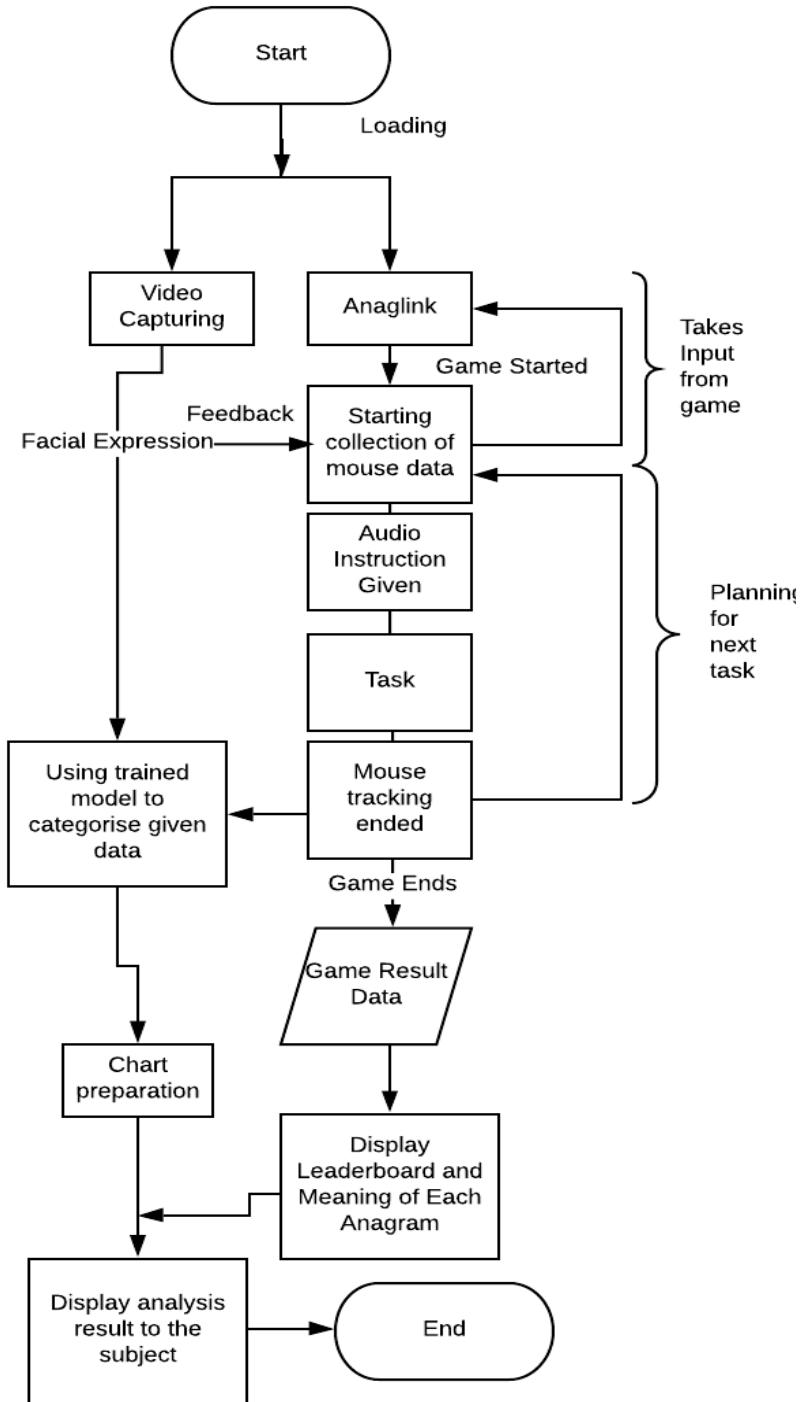
## 4.3 Project Scheduling & Tracking using Timeline / Gantt Chart

**Figure 6:** Gantt chart

Sr No.	Task Name	Q3			Q4			Q1			Q2		
		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
<b>1</b>	<b>Requirements gathering</b>												
1.1	Research												
1.2	Guidelines												
1.3	Project Initiation												
<b>2</b>	<b>Planning</b>												
2.1	Planning of Resources												
2.2	Planning of tools to be used												
<b>3</b>	<b>Modelling</b>												
3.1	Prepare Architecture Diagram												
3.2	Prepare DFD												
3.3	Report Making												
3.4	Report Approval												
<b>4</b>	<b>Construction and Deployment</b>												
4.1	Coding												
4.2	Testing												
4.3	Prepare Software manual												
4.4	Deployment in environment												

## 4.4 Flowchart and Methodology

**Figure 7:** Flowchart



### Step 1: Meeting psychiatrists & Human resource managers for planning stage.

Psychiatry is a very vast field. Every different case of psychiatry needs to be studied thoroughly to come to an exact conclusion. With psychiatric consultation, we will determine exact measures/tests required for knowing the state of mind of a person. A detailed study of this with a psychiatrist will help us to determine the measures to be considered for designing the game.

## **Step 2: Designing the game to implement the taken model.**

The game will be making use of human brain analytics by using special sounds & color schemes. All the instructions will be given through the headphones and various situations will be created for the player to handle. Efforts would be made to precisely judge the concentration level of the person as well as his/her mental strength.

## **Step 3: Building up a proper Human Expression Dataset.**

This will involve the collection of image data and biforgation according to its classification using metadata provided with the dataset. It will be crucial at this step to remove the garbage data from the dataset before sending it to further processing.

## **Step 4: Implementing Image Processing and applying Machine Learning on the facial images.**

We will be using OpenCV library for image processing and google's TensorFlow model to train our dataset. Since training a model from scratch is a time consuming process we will be using google's Pre-trained model called "Inception v3" to train the final layer of the Convolutional Neural Network (CNN) according to our need.



## **Step 5: Collection and Analysis of subject based upon Mouse Movement Pattern.**

Subjects mouse cursor movement and click actions would be captured to measure the extent of logical approach for connecting the anagrams. This will easily separate out subjects using random approaches.

A training Methodology and Model will be searched for the implementation of the same.

## **Step 6: Calculating the cumulative result of the Models.**

The data from the expression model as well as mouse pattern model will be clubbed to make a overall realization of the subjects capabilities and mental state.

## **Step 7: Measuring the accuracy, reliability, and scalability of the product.**

As soon as the project reaches "Beta" level we will conduct outsourced testing on the product to know the deviation of the project from our expectations

# **CHAPTER 5**

# **IMPLEMENTATION**

# **DETAILS**

- **Anaglink :**

The game module was implemented using pygame and tkinter which are specialised modules in python for development of game and graphical user interface . The implementation was done by creating separate modules and integrating them together as one . Modules were created for generating anagrams , a module for scoring algorithm , a leader board module to showcase the modules . Therefore all different modules were integrated together for functionality of the game

- **Mouse module :**

IT consists of three main functions average speed , default speed , and a function to set the dpi of the mouse

**Dpi:**

Dots per inch (DPI) is a measurement of how sensitive a mouse is. The higher a mouse's DPI, the farther the cursor on your screen will move when you move the mouse. A mouse with a higher DPI setting detects and reacts to smaller movements. This was carried out using a library called ctypes , which is used to access the windows user settings

Average and default speed – The speed at which the user scrolls while playing the game is calculated by getting mouse position at every instance , to get this position a library called WIN32GUI was used Alon with this time module was used to record time and finally calculate speed

- **K-means algorithm :**

K-means clustering (MacQueen, 1967) is a method commonly used to automatically partition a data set into k groups. It proceeds by selecting k initial cluster centre and then iteratively refining them as follows:

1. Each instance  $d_i$  is assigned to its closest cluster centre.
2. Each cluster centre  $C_j$  is updated to be the mean of its constituent instances.

The algorithm converges when there is no further change in assignment of instances to clusters. In this work, we initialize the clusters using instances chosen at random from the data set. The data sets we used are composed solely of either numeric features or symbolic features. For numeric features, we use a Euclidean distance metric

The algorithm works as follows:

1. First we initialize k points, called means, randomly.
2. We categorize each item to its closest mean and we update the mean's coordinates, which are the averages of the items categorized in that mean so far.
3. We repeat the process for a given number of iterations and at the end, we have our clusters.

In our case clusters were made using three parameters , speed of the mouse , expression and the accuracy of use

# **CHAPTER 6**

# **TESTING**

## The Game module:

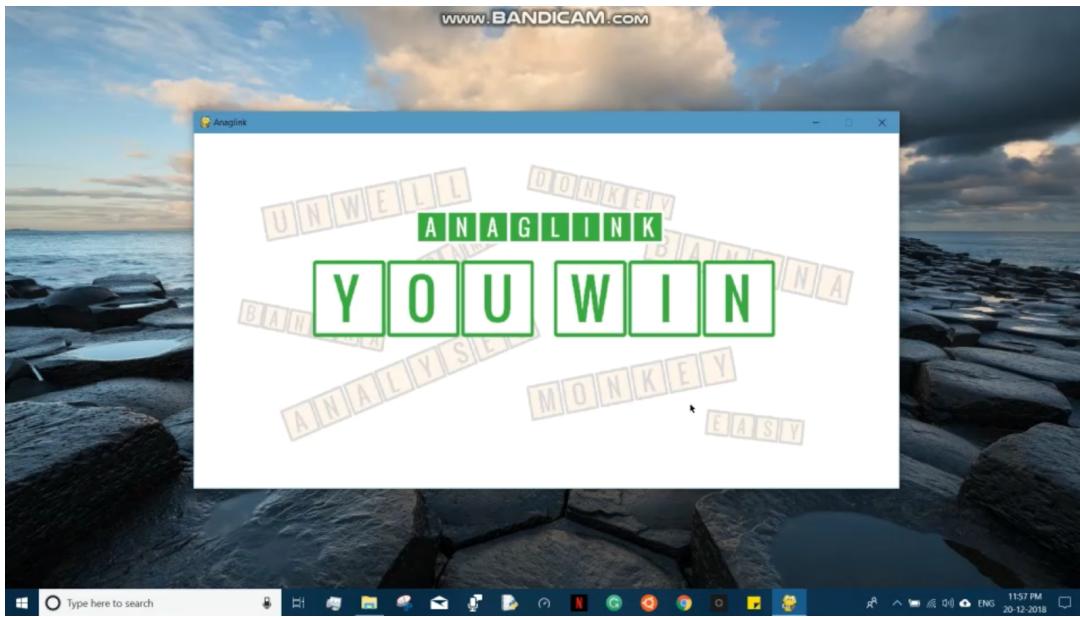
Figure 8: Game start window



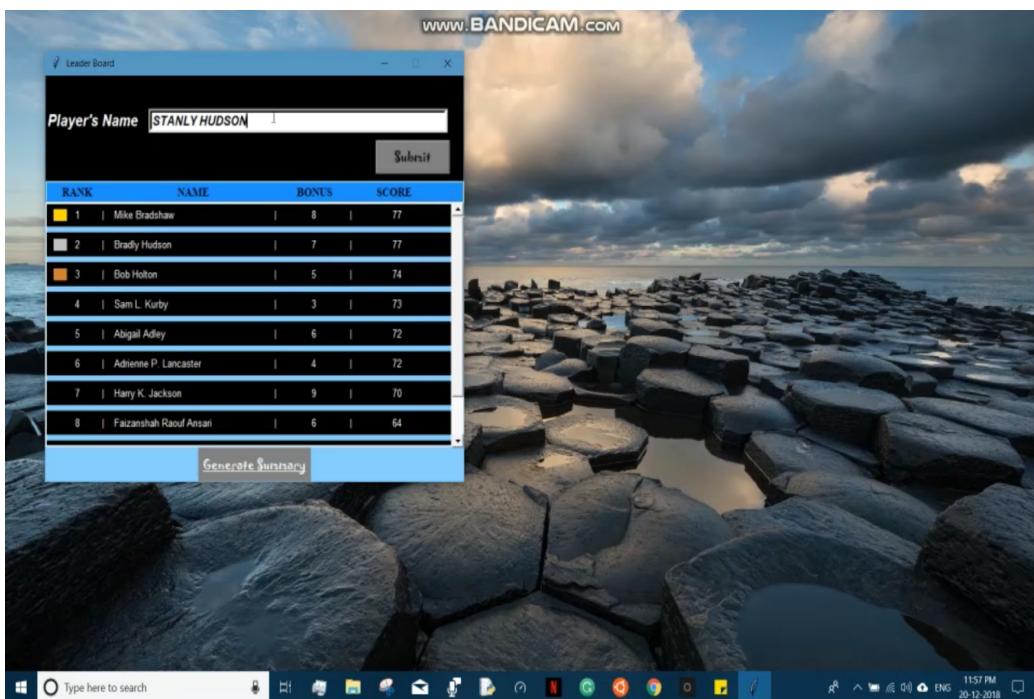
Figure 9: Gaming windows



**Figure 10: Game Result:**



**Figure 11:Game Result**



### **Figure 12: Evaluating speed of cursor:**

The speed of cursor is evaluated considering the consequent coordinates it is moved to in a specific time span .

```
No. of slots: 2
Default speed: 378.40963112946145
Speed Difference 1 = -180.30143784137266

D:\TE Project\Python>python cursor.py

No. of slots: 9
Default speed: 235.080452490715
Speed Difference 1 = 211.1511305430978
Speed Difference 2 = -228.75039618274042
Speed Difference 3 = -235.080452490715
Speed Difference 4 = -235.080452490715
Speed Difference 5 = -235.080452490715
Speed Difference 6 = -235.080452490715
Speed Difference 7 = -203.63753490121613
Speed Difference 8 = -214.05959557610134

D:\TE Project\Python>
```

### **Figure 13:Analysis of variations in expressions:**

The change in emotions in one game play are assigned weightage depending on intensity of variations

```
Microsoft Windows [Version 10.0.17134.706]
(c) 2018 Microsoft Corporation. All rights reserved.

D:\TE Project\Python>python emo.py
['happy', 'sad', 'neutral', 'surprised', 'frustated', 'fear', 'confused']
[['happy', 'happy', 'happy']] :2
[['happy', 'happy', 'sad']] :1
[['happy', 'happy', 'neutral']] :1
[['happy', 'happy', 'surprised']] :-1
[['happy', 'happy', 'frustated']] :0
[['happy', 'happy', 'fear']] :2
[['happy', 'happy', 'confused']] :1
```

Figure 14: Expression detection:

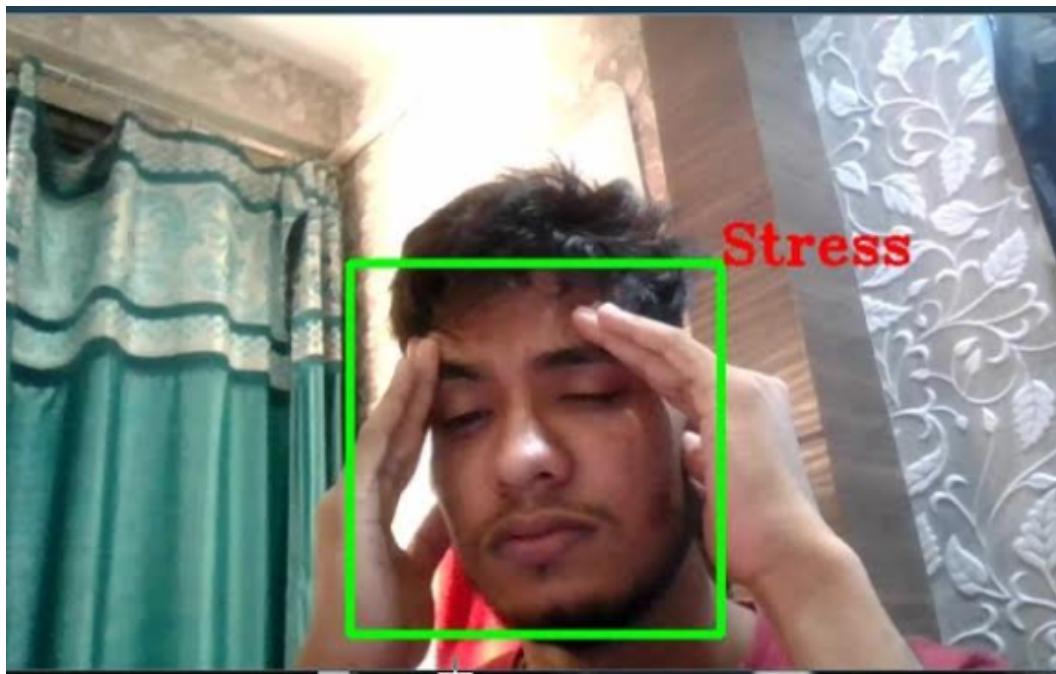
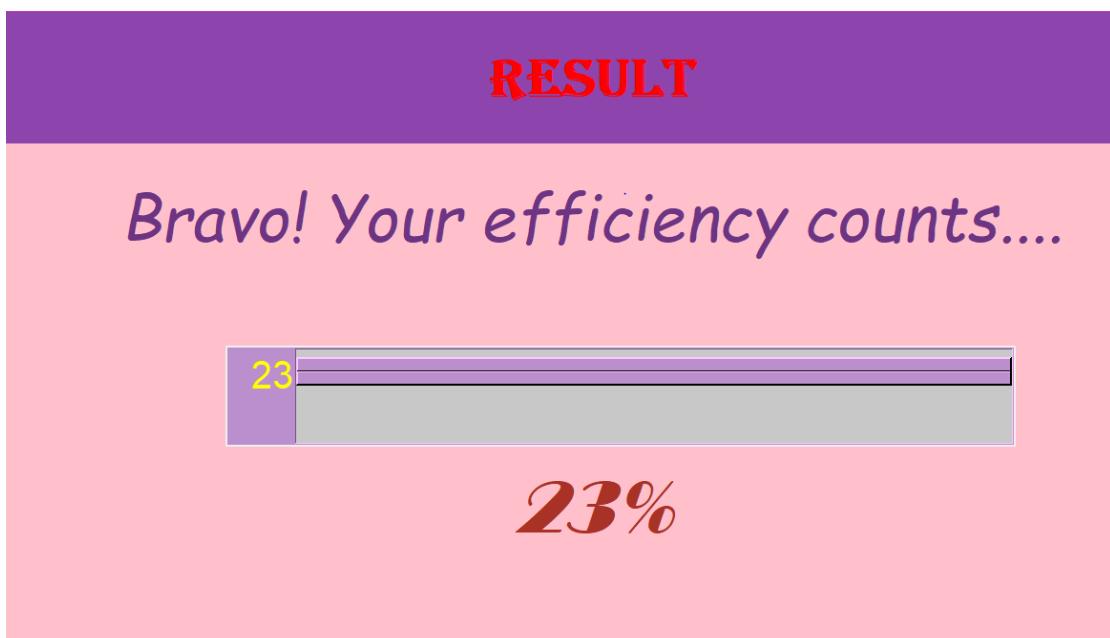


Figure 14: Result of psychometric test:



# **Chapter 7**

# **Result Analysis**

## **7.1 Modules under consideration**

### **7.1.1 The GUI**

The application is in the form of a game. We have used PyGame and Tkinter for developing the same. Pygame is a cross-platform set of Python modules designed for writing video games. It includes computer graphics and sound libraries designed to be used with the Python programming language. Tkinter is the standard Python interface to the Tk GUI toolkit, and is Python's standard GUI. Tkinter is included with standard Linux, Microsoft Windows and Mac OS X installs of Python. The name Tkinter comes from Tk interface.

### **7.1.2 The Facial Expression Detection Module**

### **7.1.3 The Machine Learning Module**

One of the most popular Machine Learning libraries, Scikit Learn has been used in our project. Along with it, the usual data science library, numpy, was used. For plotting , Matplotlib was used. The mouse clicks, Mouse speed differences, and facial expressions were normalized and were used as dimensions for the K Means clustering algorithm. The clusters formed were ranked for the result evaluation.

## **7.2 Parameters considered**

### **7.2.1 Facial Expressions**

The person, playing the game will exhibit multiple facial expressions while playing which will be recorded via the webcam of his PC. Over the course of the entire game, his facial expressions will be recorder and normalized afterwards for feeding into the machine learning algorithm.

### **7.2.1 Mouse Gestures**

It is equally important to consider the mouse events happening while the user plays the game. Mouse Gestures include Mouse Speed and Mouse clicks. For the initial 6 seconds, the speed of the mouse will be calculated and determined as the default speed. Later, the speed will be calculated every 6 seconds and will be compared with the default speed for analysis.

# **CHAPTER 8**

# **CONCLUSION**

## **8.1 Limitations :**

- Machine Model has accuracy which is limited to people without spectacles.
- Limited availability of databases corresponding to Indian Faces.
- The image dataset should be sufficient to detect the minute changes in expressions.
- Evaluation can be carried out only for one person at a time.
- A periodic update will be required to keep a check on the performance.

## **8.2 Conclusion :**

The gestures and expressions thus act as a major measure for detecting the mental makeup of a person and analysing his capability for a particular job. Also the application serves as a platform for self assessment and psychoanalysis in a interactive form.

## **8.3 Future Scope :**

- The project has a lot of scope in all kinds of psychologies. It can be used as a tool to project patient mental progress.
- This application can be used as a preliminary measure during the hiring process of candidates to test their efficiency in stressful situations.
- Online websites can use this application to filter out visitors with malevolent intent.

# **CHAPTER 9**

# **REFERENCES**

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## Review 1 Marks:

Inhouse / Industry :

**Mini Project Evaluation Sheet 2018 - 19 GROUP NO.: 8 Class: D12 A/B/C**

Title of Project: Mind Canvas

Group Members: Ketaki Bawa (D12A), Faizanshah Ansari (D12C), Chimay Tashi (D12A), Rahul Guixani (D12C)

	Engineering Concepts & Knowledge (5)	Interpretation of Problem & Analysis (5)	Design / Prototype (5)	Interpretation of Data & Dataset (3)	Modern Tool Usage (5)	Societal Benefit, Safety Consideration (2)	Environment Friendly (2)	Ethics (2)	Team work (2)	Presentation Skills (3)	Applied Engg & Mgmt principles (3)	Life - long learning (3)	Professional Skills (5)	Innovative Appr oach (5)	Total Marks (50)
Review of Project Stage 1	3	3	3	3	3	2	1	1	1	2	1	3	2	3	31

Comments: How of presentation is to be made. Please refer back side of sheet for further comments.

Dr. Mrs Gresha B. *[Signature]*

Name & Signature Reviewer1

	Engineering Concepts & Knowledge (5)	Interpretation of Problem & Analysis (5)	Design / Prototype (5)	Interpretation of Data & Dataset (3)	Modern Tool Usage (5)	Societal Benefit, Safety Consideration (2)	Environment Friendly (2)	Ethics (2)	Team work (2)	Presentation Skills (3)	Applied Engg & Mgmt principles (3)	Life - long learning (3)	Professional Skills (5)	Innovative Appr oach (5)	Total Marks (50)
Review of Project Stage 1	3	3	3	2	3	1	2	2	2	3	3	2	3	3	35

Comments:

Can include some ideas to make more interesting.

and Analysis Poview work on Scope.

*[Signature]* *DPH*

Name & Signature Reviewer2

Date: 12th FEB 2019

## Review 2 Marks:

Date: 2018 - 19 GROUP NO. 9 Class: D12 A/B/C															
Mini Project Evaluation Sheet 2018 - 19 GROUP NO.: 8 Class: D12 A/B/C															
Signature: _____															
Inhouse / Industry :															
Title of Project:	Mind canvas														
Group Members:	ketaki Buiwa, faizanshah Ansari, chimay Joshi, rahul Gurmani														
	Engineering Concepts & Knowledge (5)	Interpretation of Problem & Analysis (5)	Design / Prototype (5)	Interpretation of Data & Dataset (3)	Modern Tool Usage (5)	Societal Benefit, Safety Consideration (2)	Environment Friendly (2)	Ethics (2)	Team work (2)	Presentation Skills (3)	Applied Engg & Mgmt principles (3)	Life - long learning (3)	Professional Skills (5)	Innovative Approach (5)	Total Marks (50)
Review of Project Stage 1	4	4	4	2	4	2	2	2	1	2	3	3	4	5	42
Comments:	Project incomplete, Integration needed														
Signature: _____ Name & Signature Reviewer1															
	Engineering Concepts & Knowledge (5)	Interpretation of Problem & Analysis (5)	Design / Prototype (5)	Interpretation of Data & Dataset (3)	Modern Tool Usage (5)	Societal Benefit, Safety Consideration (2)	Environment Friendly (2)	Ethics (2)	Team work (2)	Presentation Skills (3)	Applied Engg & Mgmt principles (3)	Life - long learning (3)	Professional Skills (5)	Innovative Approach (5)	Total Marks (50)
Review of Project Stage 1	4	4	4	2	4	2	2	2	1	2	3	3	4	5	42
Comments:	No analysis been done, lack of facial expression implementation.														
Signature: _____ Name & Signature Reviewer2															

Date: 12th March 2019