FEASIBILITY STUDY
FACE CLASSIFICATION SYSTEM

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1. Introduction

1.1 Overview of the Project

This project is about a real time face detection and emotion detection system. Here the system is implemented to classify the emotions of a given facial imagery. An **image** will be given as the input to the system where the system would output the **text of emotion** of the face. In this system, we hope to deal with **8** different emotions recognized as **anger, contempt, disgust, fear, happiness, neutral, sadness and surprise** and detect which one of those the given face (as image) is expressing at the largest scale.

1.2 Objectives of the Project

The objectives of this project is to-

- Detect emotions of a **human face**.
- design and implement a **mobile app to classify the emotions of captured image**.
- Provide a **good environment for the people who are affected by bad feelings**.

1.3 The Need for the Project

A successfully implemented system of this project can be embedded into various number of applications. For an instance, this system can be used in a **video conference applications** where some **animation** suggestions can be provided with accordance to the **emotional status of the user**. Or use this system in a **Video player** where the **video** suggestions can be provided with accordance to the **emotional status of the user** [1][2].

1.4 Overview of Existing Systems and Technologies

Techniques planned to be used in the implementation:

The system is planned to be developed using **Android Studio**. **Java** will be used in developing the **REST API** and **MySQL** database will be connected with **REST API** and database consist of **YouTube links** according to the feelings.

Existing similar systems:

Yale center has been developed a **Mood meter** for all people and especially for children. It helps to **concentrate the kids' education** [3].

App store has an app. This app focuses on **helping kids read body languages** and understand emotions by looking at gorgeous pictures and figuring out which person is expressing a given emotion [4].

1.5 Scope of the Project

The system to be developed would deal with a **single user at a time** where he/she would be provided with a **user interface to pick and upload an image** for emotion detection. The system would analyse the given imagery under consideration of 8 different emotions identified as anger, contempt, disgust, fear, happiness, neutral, sadness and surprise and take percentages of each emotion and present the user a text as the **most probable emotion** according to the input.

1.6 Deliverables .

- A **standalone application** with a GUI for the user to interact
- **Intermediate Communicator Module** (REST API).
- **Database consist** of Youtube links
- A user manual
- Software Requirements Specification document

2. Feasibility Study

2.1 Financial Feasibility

This project is purely built using **open source platforms** (Emotion API, MySQL, Java (REST API) and Android Studio). All these functionalities come absolutely free, so the project seems financially feasible. In users' perspective, they just need a **Android Mobile with an internet connection** to use the system. They are **not required** to **spend anything** else to use the system.

2.2 Technical Feasibility

Interface of the system will be developed in **Android Studio**. **Java** will be used to develop the **REST API** while **MySQL** will be used as the database to **store the data**. These technologies are commonly used and free of charge, thus it will be feasible to use these to develop the system. Moreover, the software should be well documented and easily configurable.

2.3 Resource and Time Feasibility

The technologies to be used to develop this system are Android Studio, Java and MySQL. These are **free of charge and commonly used technologies**. Thus, it will be feasible to use these technologies to build the system.

The time period allocated to complete this system is nearly **three months**. Considering the project scope and deliverables, it will be feasible to complete the system **within that time**.

2.3 Risk Feasibility

The system should act as an **emotional assistance**. Since requirements of the project are **well structured and technologies** to be used in the project are standard and easily available, the project is **less risky**. All the **tools and libraries** to be used are **freely available** and there is **no risk in development environment**.

Moreover, the users have to **login to the system** to get the results. The final deliverable project is expected to be run on **Android mobile** and is very unlikely to fail. Therefore, very less risk associated with the issue.

2.5 Social/Legal Feasibility

The input from the system is a **sensitive data** which should **be highly protected**. Thus, the **login system** will be using **encryption to protect passwords** and **prevent unauthorized access** to the accounts.

There will be **no legal issues** regarding the planned system.

3. Considerations

- **Security**
  The login system should have authorized access mechanisms to prevent unauthorized people from accessing the data. Passwords will be encrypted and stored to ensure secure system.

- **Usability**
  The system should be user friendly. Thus, getting login details, sending the result and such functions have to be done in a manner that will be easier for the user to use them.

- **Performance**
  This system should have a considerable performance since this is developed with the hope of embedding this to other applications such as video conference applications and video player applications. The system is expected to deliver the desired output within a millisecond time frame since the information obtained will have to go through further computations in a real-world application.

- **Reliability**
  The aim of the system is to get the image from a user and give corresponding output. Thus, the system has to make sure that the emotions are correct. Reliability of the result depend on Microsoft API.

4. References

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