SmileSnap (auto capture selfie by detecting smile)	Version: <4.0>
Software Requirements Specification	Date: <26/04/2024>
#1	

Software Engineering Project

Software Requirements Specification

Version 4.0

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1. Introduction

1.1 Purpose

The purpose of this document is to outline the requirements for the development of an auto-capture selfie system with smile detection.Selfies of the user will be captured once they allow camera permissions ~~and there are suitable conditions to detect smiles~~ .~~The real life images can be used to enhance act as a feedback for our CNN model .~~ *Selfies will be captured when the user is at a optimum distance from the camera and in suitable ambient condition*s

1.2 Scope

The system will consist of software components for smile detection, image processing, selfie capture, user interface, and ~~storage~~. ~~The CNN model~~ will be deployed on a website which users can access through the ~~Internet~~ . *Haarcascade from OpenCV will be used to to detect smiles , it is a ML based approach and will be deployed on Github .*

1.3 Definitions, Acronyms, and Abbreviations

SRS: Software Requirements Specification
UI: User Interface
CNN: Convolutional Neural Network

2. System Overview

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2.1 System Description

The auto-capture selfie system with smile detection will use computer vision algorithms, like HaarCascade ~~including CNNs~~, to detect smiles in real-time camera feeds. When a smile is detected, the system will trigger the camera to capture a selfie. The image will be displayed to the user and interactive buttons will be used according to the user's choice (retake selfie again , or to download the selfie) . ~~Further , we will ask users for permission to use the image to improve our algorithm , if they agree we will transfer it to our database .~~

2.2 System Features

Access to camera
Smile detection in real-time camera feeds
Automatic capture of selfies upon smile detection + auditory notification
User interface for configuration and feedback
~~Storage of captured selfies~~

3. Functionality

3.1 Smile Detection

The system shall analyze camera frames for the presence of a smile using a smile detection algorithm.
The system shall use image processing techniques to validate detected smiles and filter out false positives.
~~The system will notify the user if minimum conditions (eg brightness) is not met~~

3.2 Selfie Capture

Upon detection of a valid smile, the system shall trigger the camera to capture a selfie.
The system shall notify the user that selfie has been captured.

3.4 User Interface

The system shall provide a graphical user interface for users to control webcams, view captured selfies, and ~~buttons to download /retake selfies.~~
The user interface shall be intuitive , not complicated for first-time users of the webpage.

3.5 Storage

The system shall store captured selfies locally on the device or remotely on a server, depending on user preferences.

3.5 Permissions and Security

The system shall ask users permission to access camera , storage features and not misuse the permissions in any way
The data shall not be transferred to third-party applications
The system shall comply with privacy regulations and provide users with control over their data.

4. Other Requirements

4.1 Accuracy and Performance

The system shall achieve real-time smile detection with minimal latency.
The smile detection algorithm shall have a high accuracy rate in detecting genuine smiles while minimizing false positives.

4.2 Hardware Requirements

The system shall be compatible with devices equipped with a camera and sufficient processing capabilities.
The system's performance may be limited by the hardware specifications of the device.

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4.3 Legal and Ethical Considerations

The software must adhere to all applicable laws and regulations concerning user data privacy and healthcare data handling.

Ethical considerations regarding the use of Fair Use and Non-discrimination: Design algorithms and decision-making processes to be fair, transparent, and free from bias.

5.Conclusion

This Software Requirements Specification (SRS) document delineates the necessary specifications for the creation of an auto-capture selfie system featuring smile detection. Further details and specifications may be appended as necessary throughout the development process.