Hochschule Augsburg
University of Applied Sciences

Fakultät für Informatik

soHappy

Marcel Arndt
Hochschule Augsburg
Augsburg, Germany

Lukas Diehm
Hochschule Augsburg
Augsburg, Germany

Anna Gsell
Hochschule Augsburg
Augsburg, Germany

Kok Yew Lim
Hochschule Augsburg
Augsburg, Germany

Fabian Siegel
Hochschule Augsburg
Augsburg, Germany

***Abstract*—Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet. Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet.**

I. Introduction

Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren. Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren. Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren. Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren.

The research objective of this paper is to design and implement the approach proposed by Moore, Galway and Donnelly in [**?**]. Finally, a conclusion is drawn in section VII.

II. Background

Since Viola and Jones proposed “Rapid Object Detection using a Boosted Cascade of Simple Features” in 2001, their concept is the basis of most face detection approaches. It’s an extremely fast and solid machine learning approach for object detection in videos and pictures, e. g. faces.

In detail, the concept is distinguished by three key components. The first is the âIntegral Imageâ, a new image representation which allows the detector to compute features very fast. Secondly an AdaBoost based learning algorithm selects a small number of promising visual features and constructs very efficient classifiers. The last component is a method which combines increasingly more complex classifiers in a âcascadeâ where most of the computation time is spent on critical object-like parts of the given image by discarding non-promising regions early in the analysis process [3].

For that reason the approach is highly appropriate to fulfill the face detection task of the soHappy application. The open source computer vision and machine learning software library OpenCV provides a cascade classifier class for object detection, which uses the concept of Viola and Jones [1].

III. Methodology

According to [2], lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet. Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet. Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet.

A. User Journey

Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum.

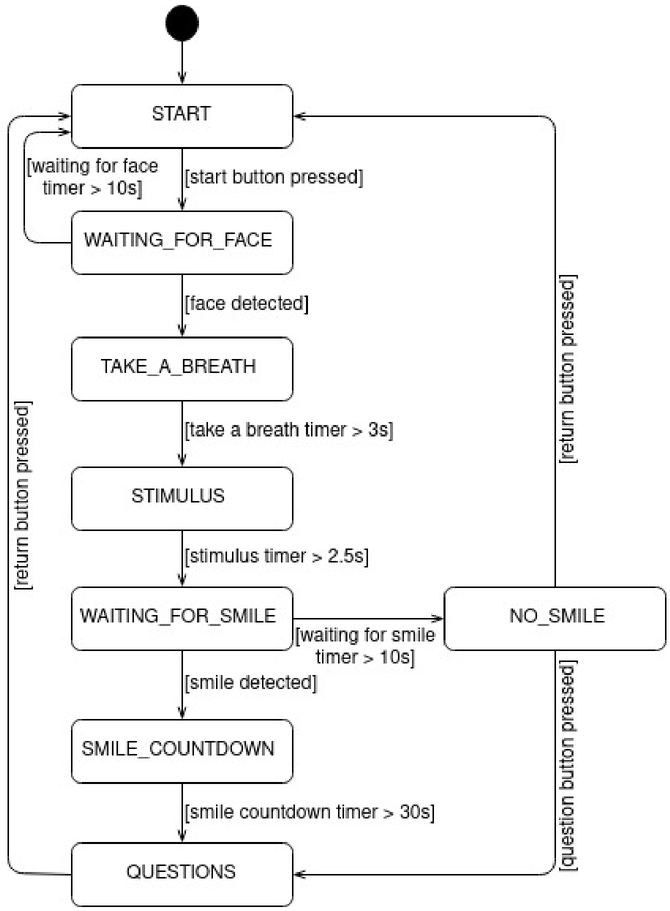

Fig. 1. The state diagram.

B. Architecture

Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum.

C. State Machine

Figure 1 shows the states and transitions of the state machine. A state change can be invoked throw three different kind of actions: An user action (for example pressing a button), a timeout after a specified couple of seconds or an significant analyser result (face detection or smile detection).

Note that if a face is detected and the user moves his face out of the frame afterwards, the process continues and handles this event indirectly as missing smile. Consistently, the face leaving the camera frame after a first smile detection is not dealed with explicitly but leads to low smile results. Furthermore instead of an end knot, the application flow returns to the start screen, represented in the start state.

D. User Interface

Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum.

IV. Implementation

Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren.

V. Results

Lorem ipsum dolor sit amet.

VI. Discussion

Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren.

VII. Conclusion

Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren. Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren.

References

[1] OpenCV team. Cascade classifier. 2020. Retrieved September 16, 2020.
[2] Ruut Veenhoven. Is happiness relative? *Social indicators research*, 24(1):1–34, 1991.
[3] Paul Viola and Michael Jones. Remember to smile: Design of a mobile affective technology to help promote individual happiness through smiling. 2017.