

Smile Catcher – A Gamified Approach to Smiles

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ABSTRACT

As we learn more about what is detrimental to the human body, more tools are developed to combat these deterrents. However, stress levels continue to increase and the effects are present in our genes [1]. Smile Catcher is attempt to lower stress and increase happiness by gamifying smiles. Players are challenged to capture smiles from other players or people they interact with in their daily lives. The overall objective is to provide users with a fun game to play that will benefit their overall health and wellbeing.

Author Keywords

Happiness; Well-being; Gamification;

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

INTRODUCTION

Smile Catcher is a Google Glass game in which users try to catch as many smiles they can in a single day or play. Users can chose to play in a single-user or multi-user mode. The objective of the game is to have users interact with other users or people in a positive way resulting in smiles and an overall increase in well-being and happiness.

BACKGROUND

Previous research has shown that smiles directly correlate to happiness and can even insight happiness in a person [2]. This has resulted in several projects that attempt to measure or force this interaction between smiles and happiness. While other projects have tried to log smiles or even force smiles, not many projects have tried to combine the two in a mobile game for users to enjoy.

Mood Meter

The mood meter [3] was a MIT project that displayed a measured mood using smiles. Systems were placed in several areas around MIT's campus and used a camera system to detect smiles in community members as they interacted in these areas. The data collected was used to try to raise awareness of how smiles can positively affect an environment. While the mood meter captured smiles, it did not actively encourage users to smile.

HappinessCounter

The HappinessCounter [4] was a project that attempted to forces smiles through the use of an electronic magnet system attached to a fridge. To open the fridge, the user had to smile. This project was intended for users that lived alone and had limited human interaction. While the

HappinessCounter forced smiles and logged smiles, the applications were limited to static locations. Smiles occurring in areas away from the system were not logged.

PRODUCT DESCRIPTION

Smile Catcher attempts to log smiles caught from non-users and encourage the user to spread happiness through smiles, which will hopefully result in internal happiness. The system is contained to Google Glass, which makes it completely mobile. The camera on Google Glass is used to periodically query for smiles. The game consists of three parts: image querying, image processing, and feedback.

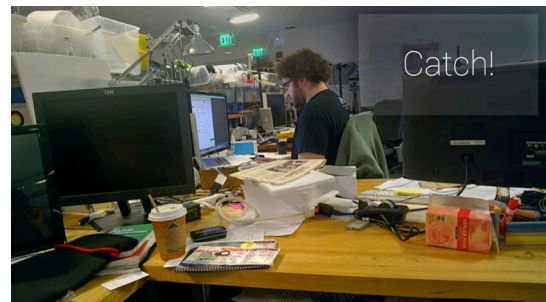


Figure 1: Screenshot from Smile Catcher in multi-user mode

Image Query

The image querying process differs between the two game modes. However, in both cases images are queried at a set interval and sent to a server for processing. In single user mode images are queried throughout the day. This happens passively and the user can proceed with their day as normal. The rate can be increased based on perceived activities. In multi-player mode, multiple users activate the game together in the same space. During this mode, images are queried for a set period of time considered the game length. The query rate is faster than the single user mode, since smiles are more likely to occur during this period. Throughout the game images are continuously sent to the server for processing.

Image Processing

All image processing is done on the server in order to save battery life on the hardware. Once an image is received, OpenCV is used to process the image [5]. A facial haar cascade classifier is used to determine if a face exists in a

given image. If an image is present, a smile haar cascade classifier is used on the bottom half of the facial region to determine if a smile is present. If a smile exists, the game or day counter is increased.

Feedback

At the end of the day or the end of the game the user(s) are given a score calculated from the day or game counter. For multi-user mode the score is used to determine the winner of the game. In single-user mode, the score is used to help the user gauge their happiness over a period of time. This score can be sent to others to incite a long-term competition. Overall, this score will hopefully become as important as how many steps were taken or the amount of calories consumed during a day.

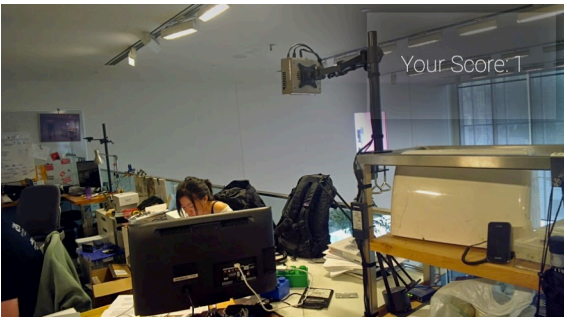


Figure 2: Feedback of score after a round of play

LIMITATIONS

Battery Life

Currently, Google Glass has limited battery life, restricting the time that can be spent querying images, how frequently this querying can occur and where processing can occur. When queries are made at a high rate the battery overheats causing noticeable discomfort to the user. Similarly, processing cannot occur on the hardware if extended use is desired.

Accuracy

Currently, OpenCV's built in cascade classifiers are used to determine smiles. These classifiers can be improved and more robust methods of detecting smiles can also be explored. Due to query limitations, smiles can be missed as not every moment is captured. Future work will be done to optimize the software further.

FUTURE WORK

To make Smile Catcher a useable game, more work will be done to make it more robust, easier to use and more impactful.

Multi-user integration

To allow for multiple users to play the game simultaneously, a method for accepting and rejecting

players needs to be defined. Each user needs a unique identification to the server so that each users score can be reported accurately. Finally, a set of rules needs to be developed to ensure an effective fun game.

Feedback methods

While a raw score is helpful to user, more can be done to better enhance the users experience. Overall, a long-term feedback method needs to be developed to log player's activities over time. This system would display users high scores, trends and possibly advice on how they can further improve the interactions. Also a more unique score method will be developed. This would reward users for capturing smiles from "new" people and even strangers.

Improved processing

As discussed earlier, processing can be improved to ensure no smiles are miss-classified or missed. This will result in investigation into other methods of classifying smiles and more effective ways of sending data to a remote server.

User Testing/Study

User testing and a user study will be conducted to test the effectiveness of the system and overall enjoyment. Users will be questioned to determine their happiness before and after their time with the system. The types of interactions that occur will also be measured to determine whom users attempt to get the bulk of their smiles from. This could possibly lead to interesting interactions with "strangers" if these interactions are rewarded as described above.

CONCLUSION

Smile Catcher is a game for Google glass that not only logs smiles induced by the user, but also encourages user to interact with others in positive way. The project seeks to increase happiness in the user, therefore increasing their overall well-being. The game allows for two modes of play, single-user and multi-user, in which images are queried at set intervals and sent to a server for processing. Users are given feedback in the form of a raw score signifying the total number of smiles captured during that time period. Future work will be done to make the game more robust and enjoyable. After which, a user study will be conducted to measure its effectiveness in increasing happiness, encouraging unique interactions and inducing smiles.

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