

Sentr3y3

An eye that sees all...

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About App

Sentr3y3 is a real-time user activity monitoring app dedicated to the enhancement of digital well being of all the users of a particular device. Using state of art facial detection technologies, the app detects the user using the computer in real-time, monitors their activities, and takes suitable pre-decided actions in turn. The main idea for this app arose in our minds, while we noticed that many households usually have one computer, which everyone uses commonly. These introduce a lot of problems like content restriction, age restriction, time control, privacy, and information protection (such as work-related applications). Overall built to improve the digital wellbeing of all generations alike, this app comes with multiple features including the parental lock.

Features

- The app lets users add their faces, and lets the admins customize app preferences and allow screen time for each app for each user.
- The app detects the users accessing the system in real-time using facial recognition in real-time, and keeps a track of the time spent by each user on pre-decided applications, and is capable of handling sudden change of user.
- If the parental lock is enabled for a user, Sentr3y3 continuously checks for any vulgar or profane apps/sites the user is visiting, and

upon detection, kills the app. It also reports the incident to the admin (usually the parent) thus keeps the children safe from the dangers of the cyber world.

- In case the **stipulated app time limit set for a user is going to be crossed, Sentr3y3 displays a warning message to the user to save his work. Upon reaching the said time limit, Sentr3y3 pauses the process that runs the application, thereby rendering the user unable to further use the application.**
- A user-friendly GUI is in the development process and stands to be completed before the final evaluation.
- In case no user is detected, or an unknown user is detected, the app automatically locks the computer screen, adding an additional layer of security.

Working

We are keeping an eye on your digital well being. What we basically do is keep a track of the open processes that you ask us to monitor at the time of setup, we query user processes and monitor the usage of the whitelisted apps with all due permissions from the user. In the basic usage scenario where the user is a mature individual we just track the usage time and pause the apps once they reach a limit set by the user, the real twist comes in when you want to monitor the usage for your children. Firstly the admin panel has a face unlock feature so only you can modify access controls. In the scenario, the child tries to access some content that might have a negative impact on their psychology and natural upbringing, we instantly generate a notification and terminate the respective app. This way you can always ensure that your child stays protected and consumes digital content safely. Also, we feature an

interactive dashboard that will help to view usage stats and keep a closer eye on how well you are doing, digitally.

The Current Application Flow

- ★ A Django backend server is started.
- ★ New users are added, their face encodings stored and their app preferences set by the admins.
- ★ The monitor script is executed and detects the users currently using the computer by taking snapshots in a regular interval. The script can detect multiple users at the same time, from the periodic snapshots
- ★ The monitor script also checks the apps opened by the user, and cross verifies it with predefined apps for that user. If any such app is opened, the monitor script updates the time spent on that app.
- ★ This script runs all these functionalities after a regular time interval (say 10 secs). If the script detects the presence of any profane apps in the user's work area, it immediately terminates that app and displays a warning message.
- ★ If the allowable app usage limit is almost reached, the script displays a warning message to the user.
- ★ Upon exceeding the time limit, the script pauses that app, giving an option to the user to reset the time limit if they are an admin.
- ★ The use of Cron scheduler resets the daily and weekly usage statistics after the beginning of a new period (basically reset the time counters to 0).

Requirements

Guido van Rossum, a computer with your favorite flavor of Linux, a webcam, and a human.

On a serious note though, here are the pieces of tech we used to build our application.

Django Rest Framework

A rapid quickfire framework to build web applications. Used to store the user and app information using its amazing ORM.

OpenCV, face_recognition library

Used to detect faces in the periodic snapshots, store the encodings about the registered user faces for detection.

Python

The omniscient language, encompassing everything, allowing rapid prototyping of ideas.

Cron Scheduler

To daily reset the database about every app's day to day usage, and to refresh the weekly statistics every week.

PyQt5, PyQt5Designer

To make wonderful GUI applications, allowing us to monitor every user's app usage, statistics, and registering new users, etc. using the QT Framework in python

XWindow

Used to access the currently opened application windows in the system. It gives us all the window ids of the current applications in use

XProp

For displaying window and font properties in an X server. Enabling us to get information about what content could be inside an application which is otherwise inaccessible from other userspace processes

Bash

For access to necessary command-line tools such as grep, windows, xprop, etc.

Links: [Github](#)