EMOPERS

Emotion intervention through Audio/Video

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INTRODUCTION

- Our team has developed a single-page Python application which performs emotional intervention.
- Our application runs EmoPy checking for the emotions Anger and Happiness.
- We attempt to get the user's mood to change from Anger to Happiness, after viewing a short (under 5 minutes) video.
- After the video is finished we run a follow up EmoPy evaluation to see if the intervention was successful (Anger ➡ Happiness).

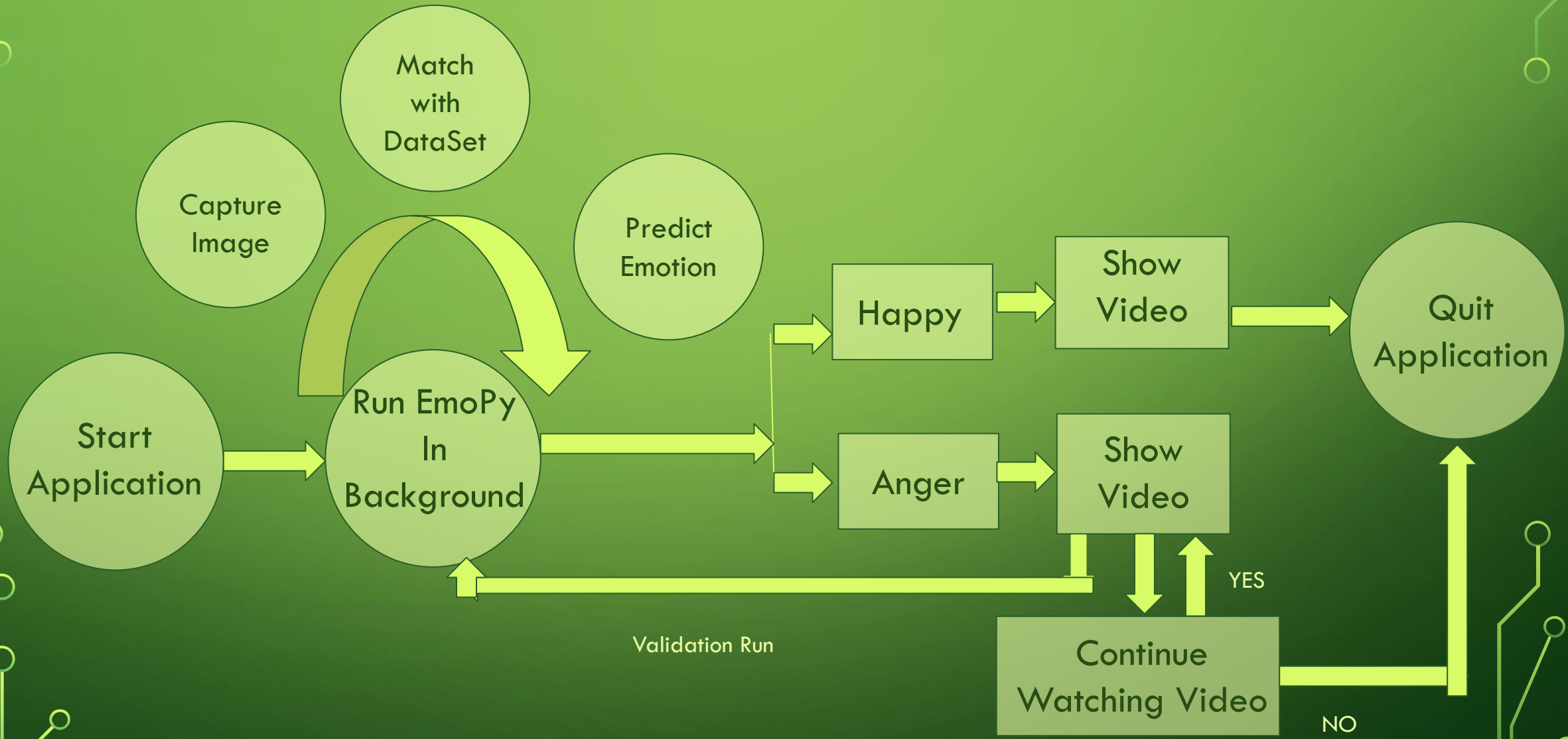
Technology Used

- Our application runs EmoPy's ***fermodel_example_webcam.py*** on the back-end, to detect the user's emotion through an image captured from their webcam.
- It uses a Python Framework called Flask, and displays a locally stored HTML file on the front-end.
- **Flask** is a web application framework written in Python.
- Flask is based on the Werkzeug WSGI (Web Server Gateway Interface) toolkit and the Jinja2 Template Engine.
- Flask does app routing, allowing us to run various sections of our Python code based on the current url path.
- These paths are set within the JavaScript script and are based on where the user currently is, in the execution states of our program (follow-up/validation run, or shutdown.) .
- We pass values from our JavaScript code to our Python code using ajax POST calls. With Flask we can easily retrieve these posted values from within the Python script, allowing us to communicate between the Python file and JavaScipt script.

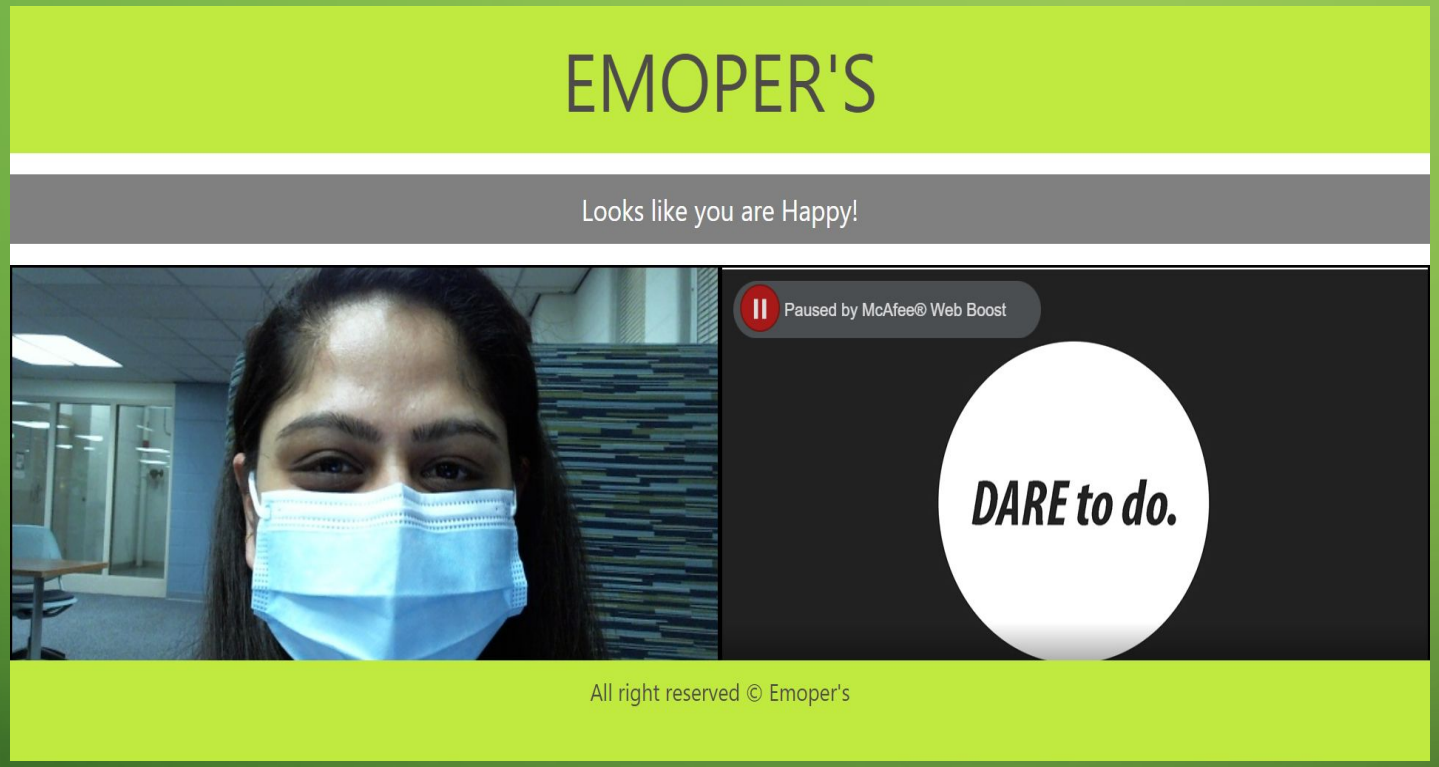
PURPOSE

- Emotional intervention tool focusing on transforming emotional status anger to calm/happy.
- In a real world scenario this tool can be used in schools , work-place , etc.
- Research shows that explicit SEL interventions are effective in helping students develop social-emotional competencies and even boost academic achievement.
- Employees are 13% more productive when they are in a happy mood.
- Existing mood detection apps can use this model to help change the mood rather than just detecting a person's mood.

APPLICATION PROCESS

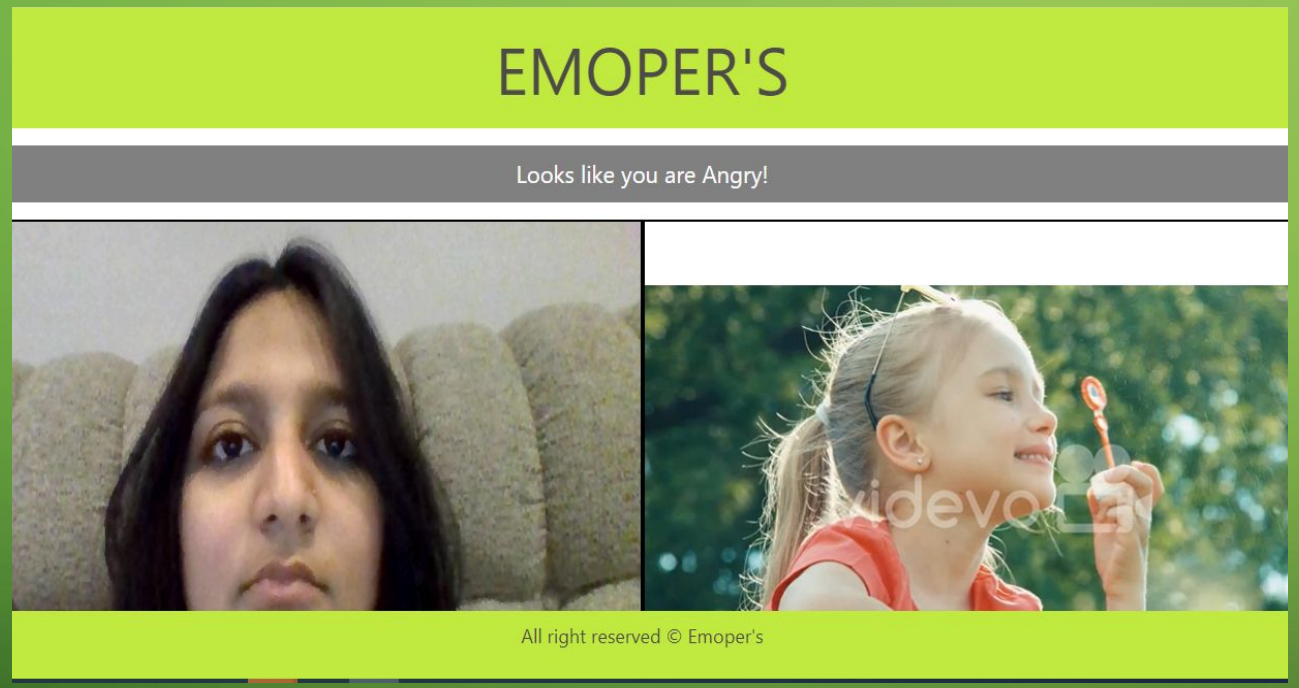


USE CASE 1



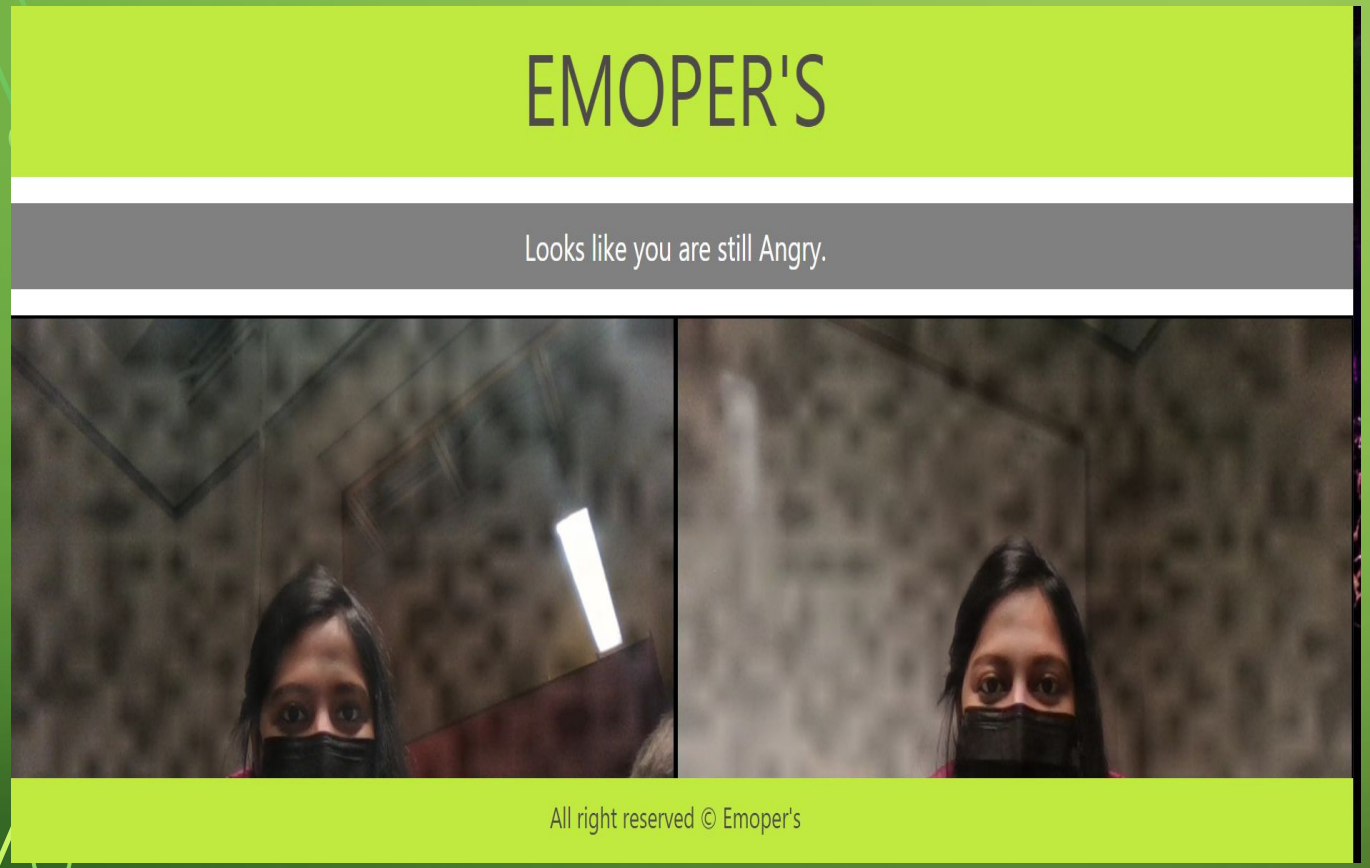
If user is detected Happy in initial evaluation, we will display a video with a motivational message, and then exit.

USE CASE 2

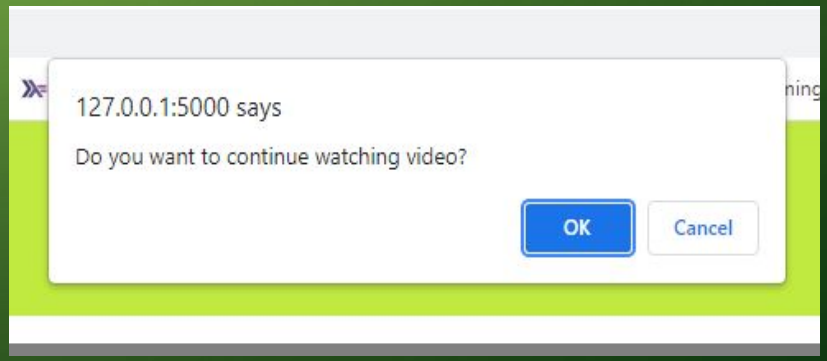


If the user is detected as Angry, we intervene by playing a video (either funny videos, controlled breathing exercise or calming music) to see if we can induce positive change in the person's affect.

USE CASE 3



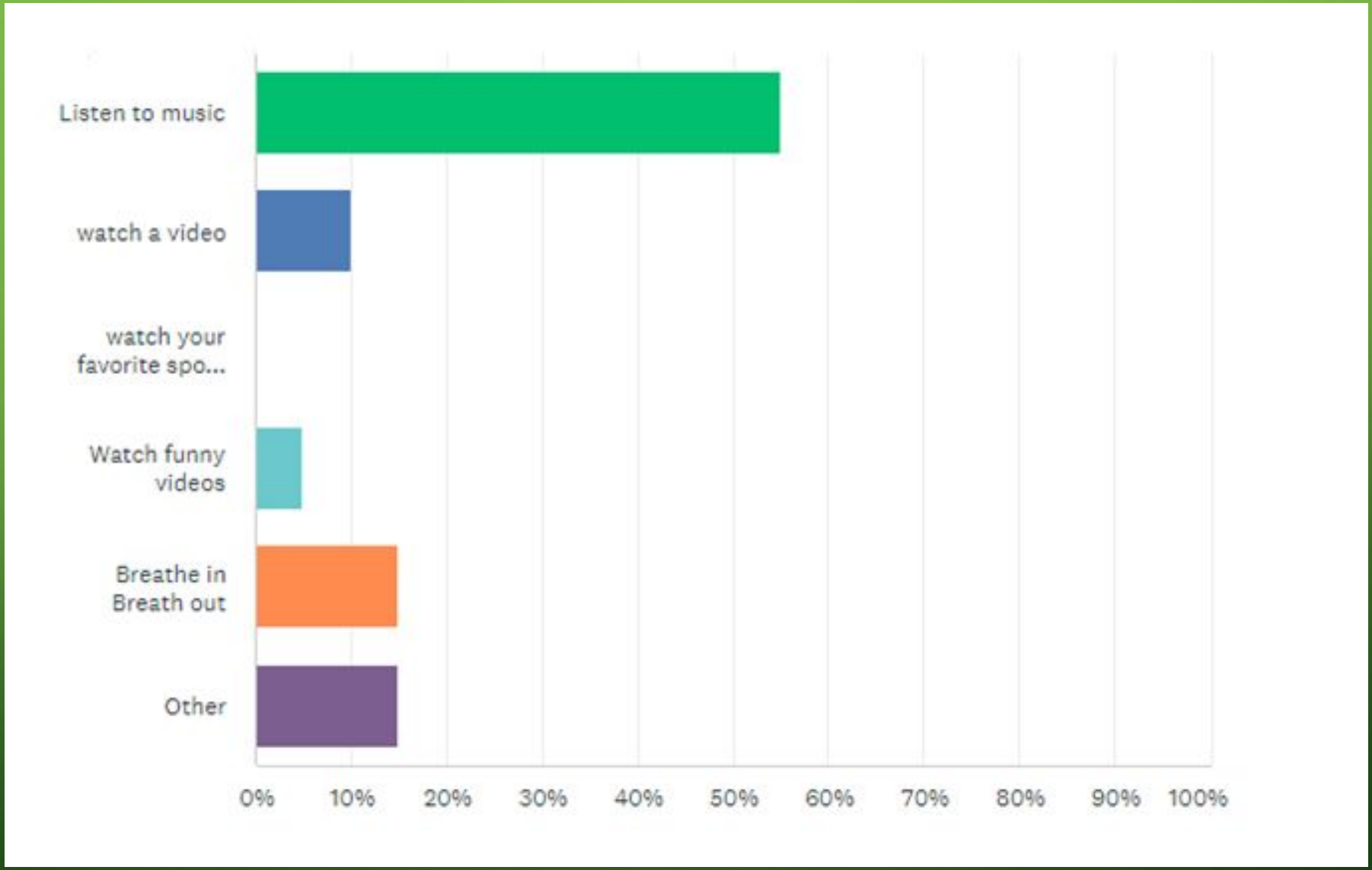
After the first intervention, we run the evaluation again to see if their emotion changed. If they are still angry then we ask user whether they want to continue watching video. If replied YES. We repeat the whole process until user quit or their emotion changed to Happy.



USE CASE 4

After the first intervention, we run the evaluation again to see if their emotion changed. If they are still angry then we ask user whether they want to continue watching video. If replied NO. We quit application.

Survey


Listen to music
watch a video
watch your favorite spo...
Watch funny videos
Breathe in Breath out
Other
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%

What would you do to change your mood from anger to calm ?

Listen to music	55%	11
watch a video	10%	2
watch your favorite sport highlight	0%	0
Watch funny videos	5%	1
Breathe in Breath out	15%	3
Other	15%	3

DATASET

DATASET consist of short videos with calming music, breathing exercises and funny videos to play after the intervention detects that they are Angry.

If they are detected as Happy the dataset also contains short videos with motivating messages that will be played.

DataSet

- Type of Dataset - mp4
- Total Number of Video - 11 for Angry users and 4 for Happy users
- Video include :
  - Funny/cute animal Video
  - Breathing Exercise
  - Calming Music
  - Motivating messages (for users who are already Happy)

EVALUATION

We were able to change user's emotion from anger to happiness.

Out of 20 runs we were able to change 8 emotion from angry user to happy

EVALUATION

100 % Angry

100 % Angry

100 % Happy

77% Angry

50 % Happy

81.8% Anger

66 % Anger

CHALLENGES FACED IN DEVELOPMENT PROCESS

- Running videos on autoplay without being muted.
- Getting values passed from Javascript to Python.
- Getting browser tab to close after intervention finished.
- Setting final instructions for setup application that works for Mac OS and Windows OS.
- Collecting videos based on different situation (for this we used youtubedl.py application).

FUTURE ENHANCEMENT

In future work we can adjust the code to detect other emotions limited to the subsets of emotions provided by EMOPY.

Change the intervention methods to include adding

1. Intervention by Self talk
2. Intervention by playing an online game.
3. Intervention by listening a self playlist.
4. Intervention by creating a conversation.

Conclusion

- In conclusion we feel like there is a lot more we could have done with this application, had we been given more development time.
- We ran into several hurdles along the way, but in the end came out with a working prototype that we are proud of.
- Would any of you be interested in having an application like this to use in your personal life or at work?
- Our code is available online at https://github.com/WCU-CS-CooperLab/emopers.git if anyone would like to look at it or try cloning and running the application.