

2019

Research Experience for Undergraduates

**Public Speaker – Judgmental Audience Interactions
Emotional and Performance Analysis**

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Motivation

- Public speaking stresses inexperienced presenters, degrading the quality of their presentations
- A system that monitors presenters' stress in real time could intervene to mollify them whenever necessary

Goal

- Multimodal analysis of interactions between science speakers and a prerecorded panel of judges
 - N=26 subjects each wrote a report and presented its summary to three disinterested/disrespectful examiners

Deliverables

- Extracted emotions from the facial expressions of subjects and judges
- Synchronization between facial expression data and physiological data
- Code to determine which judge a subject watches at each moment
- Performance data for the quality of subject presentations

Methods

- I rewrote tensorflow's "facial-expression-recognition-from-stream.py" code to work with mp4 and csv files, to display and record expression probabilities, to calculate relative time, and to iterate through subject videos autonomously
- I am manually matching physiological data to facial expression signals via visual analysis

Results

1. I extracted the emotions of 26 participants who consented to the release of their data
2. I trisected a video of three judges to separately record expression values for each face



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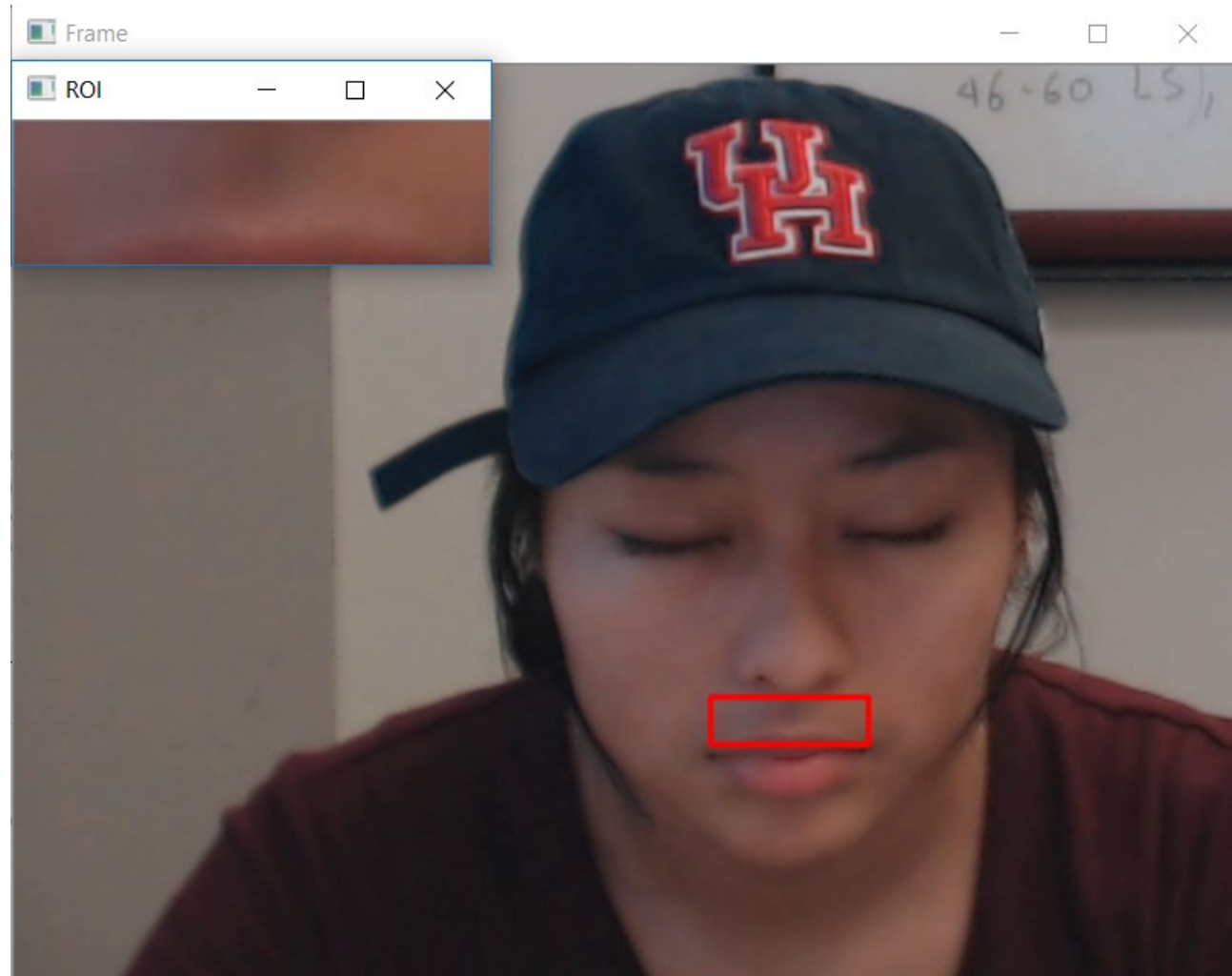


Remaining Work

1. Time register facial expression signals with physiology signals (partly complete)
2. Determine subject gaze with OpenFace
3. Assess the quality of each subject's presentation using the ETS e-rater

Secondary Project

- Objective: Repurpose an RGB facial landmark tracker to follow the upper lip in a real-time thermal video. Forward the coordinates to a separate algorithm for extraction and analysis.



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