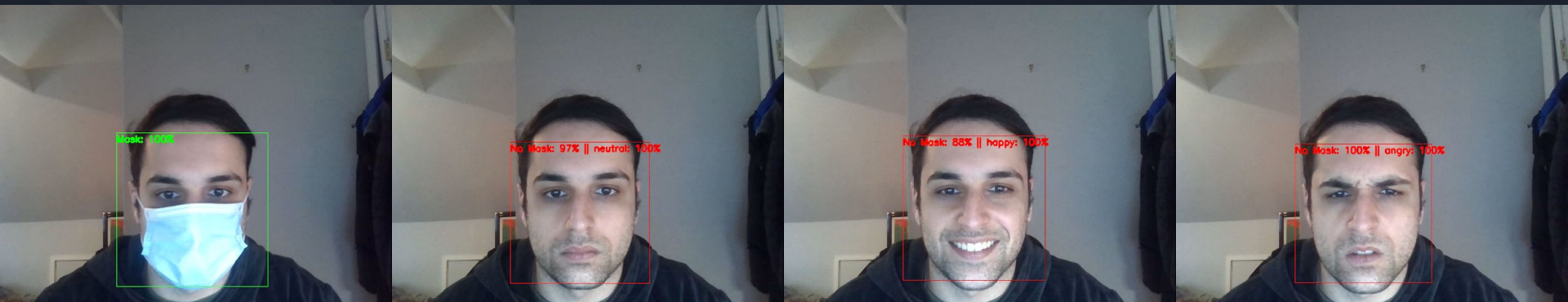


Mask/Emotion Detection System

Samuel Mohebban





Project Overview

Project Goal: Stopping Karens Before They Can Strike

- In many business around the country, problems have arised from asking people to wear a mask
- Using this algorithm, managers can detect if a person is wearing a mask, and whether they are indeed a Karen ready to strike

3 Steps

1. Detect the coordinates of a face
2. Detect if there is a mask present
3. If there is no mask present, determine their facial expression

Mask Data

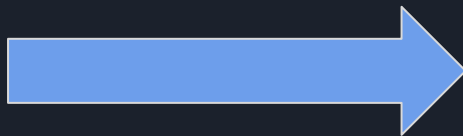
- [Kaggle](#)
- Pre split into train/test/validation

Mask Dataset Distribution

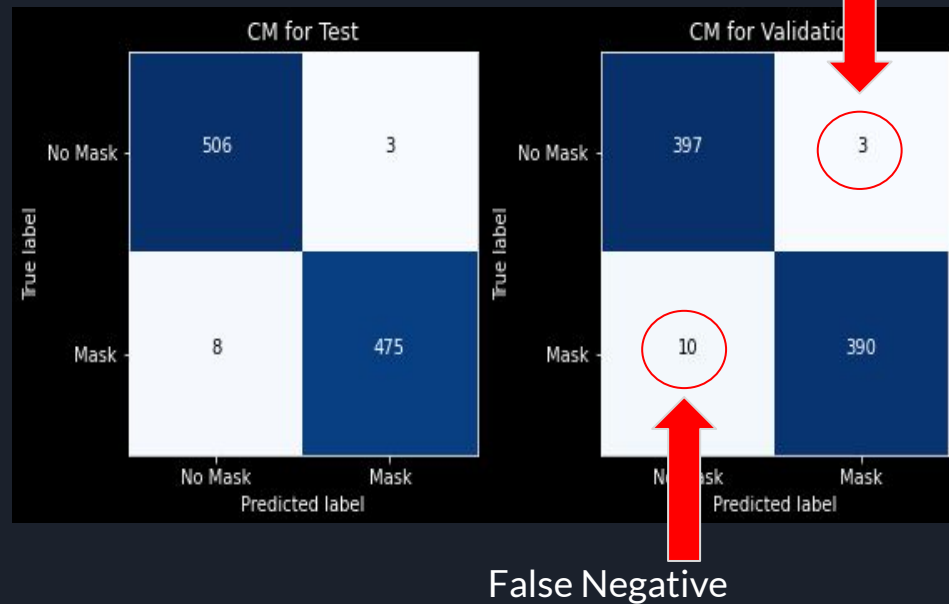
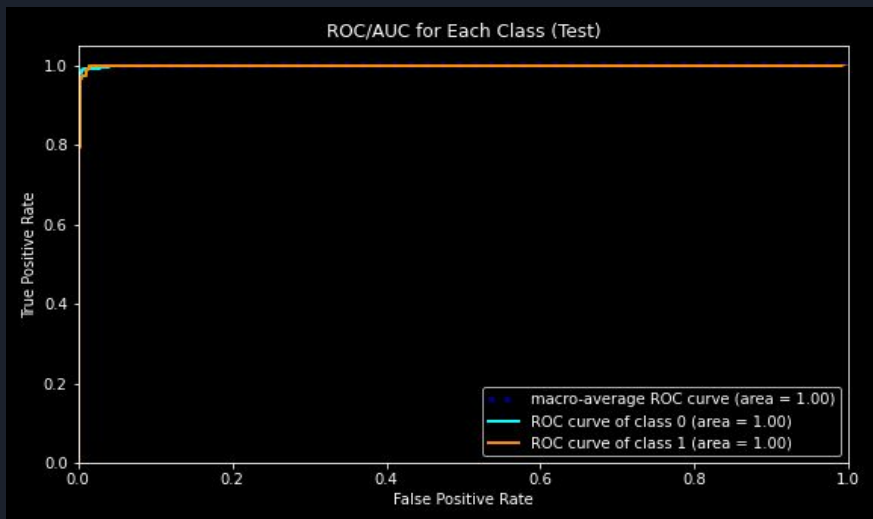


Mask Model: Mobilenet

1. Scale to (224, 224, 3) to correspond to ImageNet weights
2. Convert Image to BGR
3. Use Mobilenet Preprocessing



Mask Model Performance



Mask Model: False/True Positives

False Positives



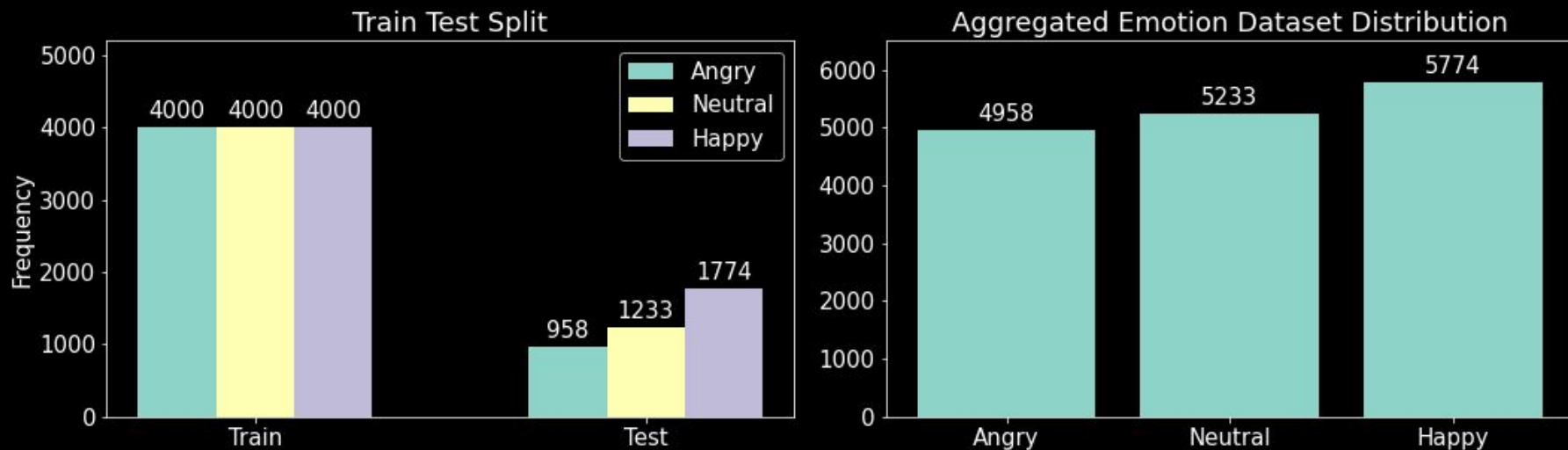
False Negatives



Emotion Data

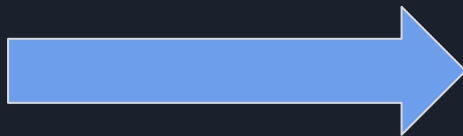
- FER-2013: [Kaggle](#)
 - Contains ~29,000 images of facial emotions (angry, disgust, fear, happy, sad, surprise, neutral)
- Pre split into train/test

Emotion Dataset Distribution

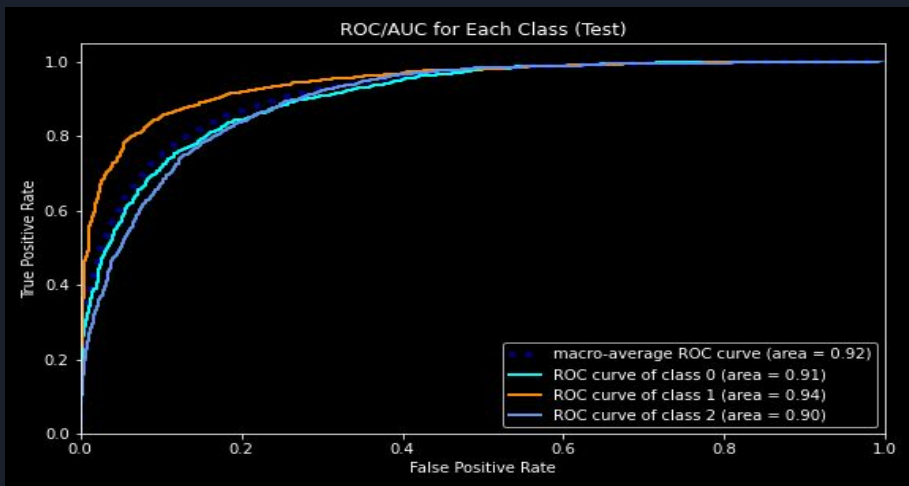


Emotion Model

1. Scale to (48, 48, 3) to correspond to ImageNet weights
2. Divide all Pixels by 255 (Standard Deviation)



Emotion Model



CM for Test

	Angry	Angry	Neutral
Angry	675	87	196
Angry	117	1521	136
Neutral	186	149	898

True label

Predicted label

CM for Train

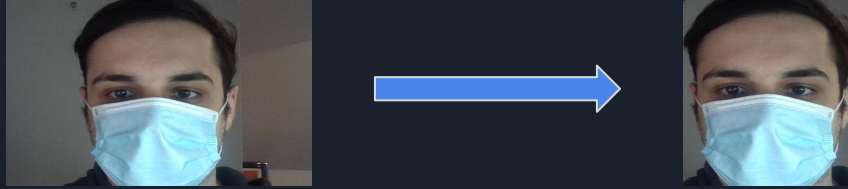
	Angry	Angry	Neutral
Angry	3172	253	570
Angry	89	3715	196
Neutral	354	324	3322

True label

Predicted label

Code Structure

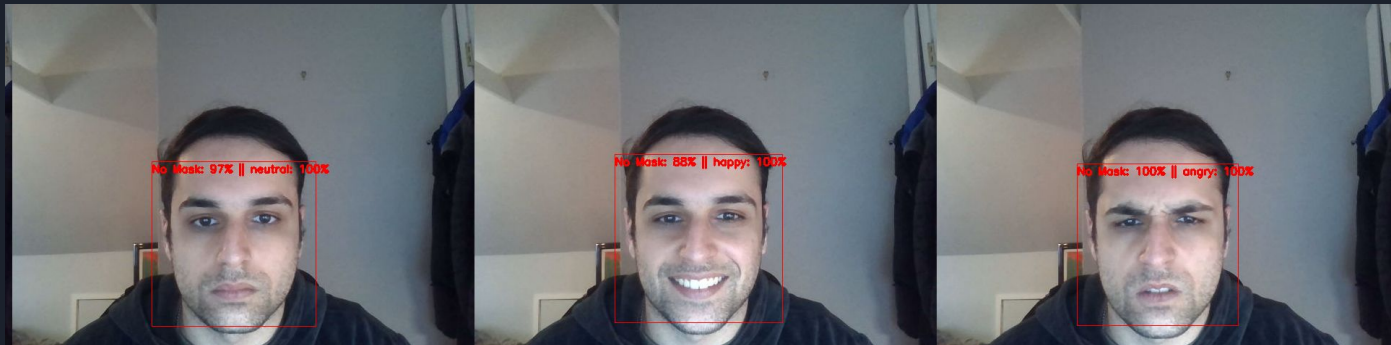
1. Extract Region of Interest (ROI) Using Haar Cascade Pre-Trained Model



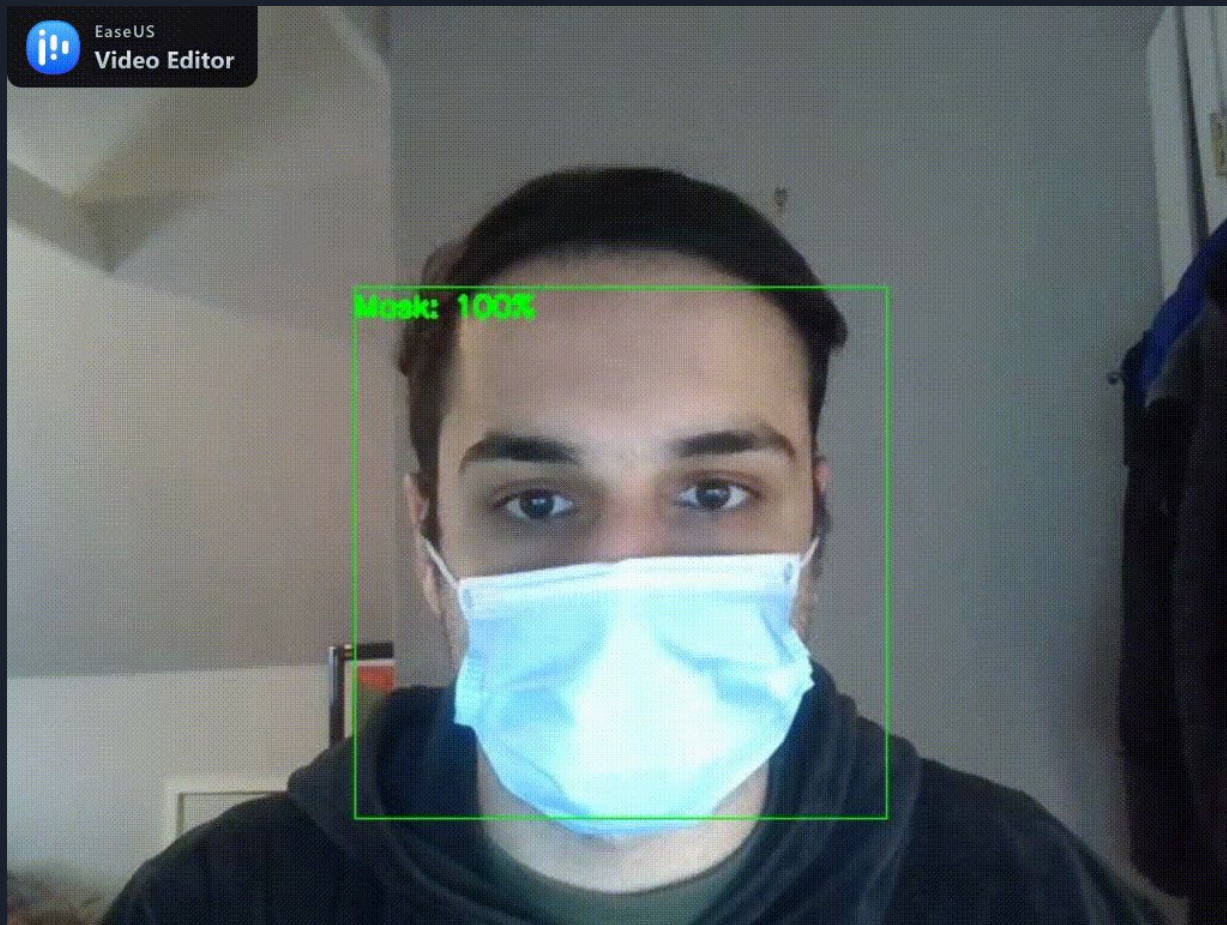
2. Run ROI Through Mask Model (Mobilenet). If Mask is Detected, Mark coordinates with Green Box



3. If No Mask is Detected, run the ROI through Emotion Model (Custom Built)



Demonstration





Learn More

1. [GitHub](#)

2. [Medium](#)