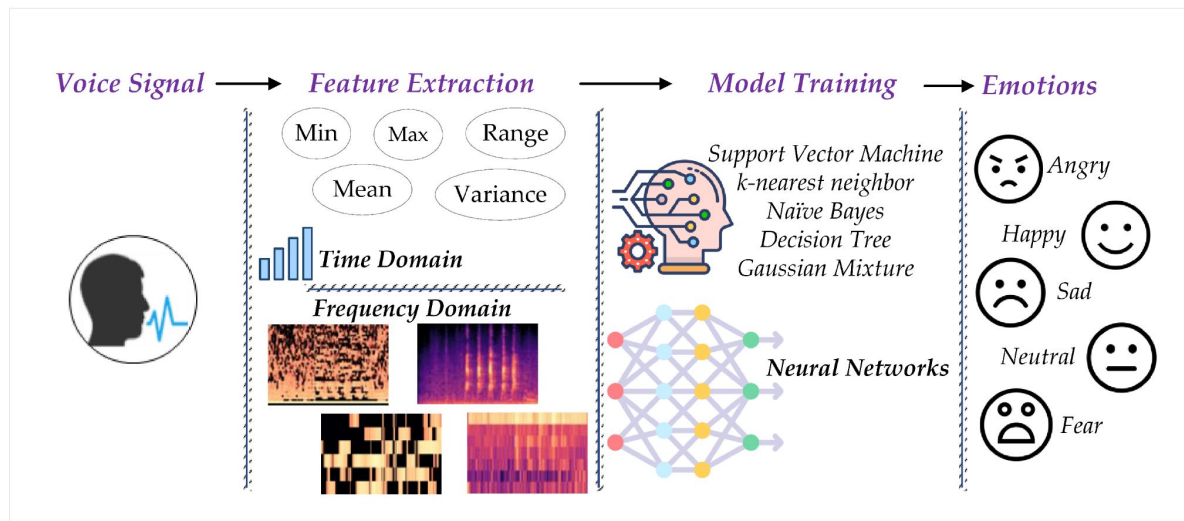# SED

Thomas Powell, Ryan Casey and Bill Pan
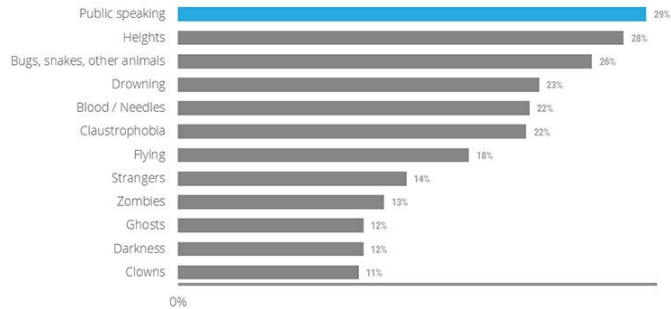
Introduction/User Story

- Website that assists people with understanding and producing emotion in their professional or day-to-day speech
- Centralized hub for analyzing and improving emotion in speech
- People with communication disorders or disabilities
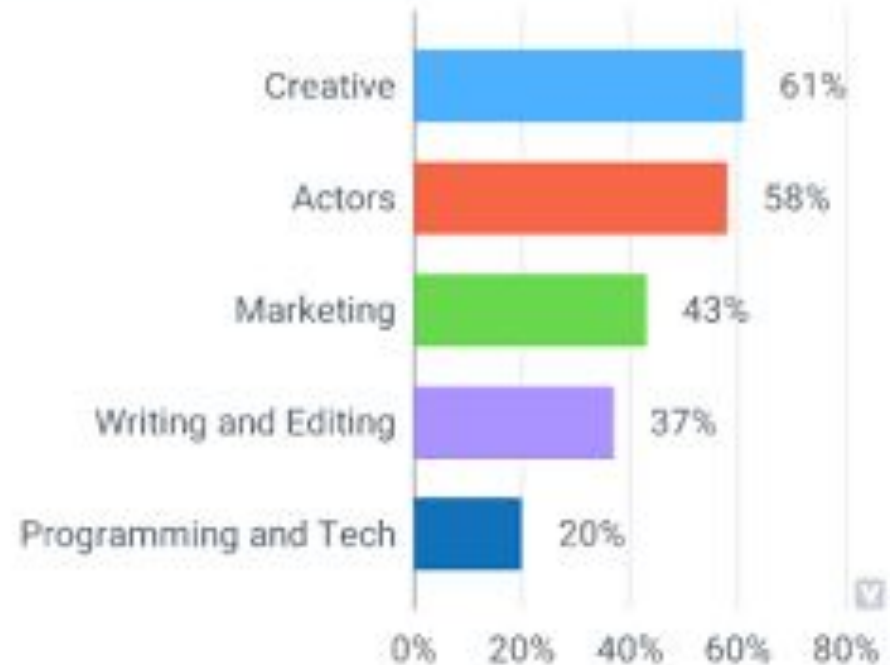- Public speaking or voice acting

Market

**WHAT IS AMERICA AFRAID OF?**

% OF AMERICANS WHO SAY THEY FEAR...

Public speaking	29%
Heights	28%
Bugs, snakes, other animals	26%
Drowning	23%
Blood / Needles	22%
Claustrophobia	22%
Flying	18%
Strangers	14%
Zombies	13%
Ghosts	12%
Darkness	12%
Clowns	11%

0%

Source: Chapman University survey on American Fears, 2014.

1   Michael Smith | www.slideheroes.com

Types of Freelancers Hired in 2020

|	
Creative	61%
Actors	58%
Marketing	43%
Writing and Editing	37%
Programming and Tech	20%

0%   20%   40%   60%   80%

Use Cases

- Speech Emotion Distinguisher
- Tips on how to achieve a desired emotion in speech
- About page to learn about model and us
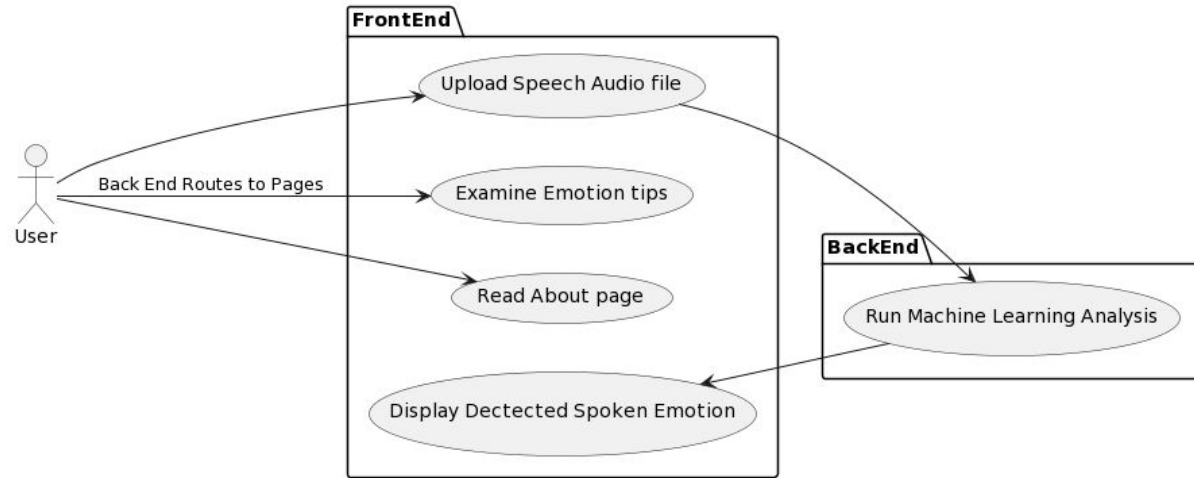
Machine Learning Algorithm

- Trained on RAVDESS dataset using multi-class classification
- Trained Scalar
- Encoded
- Convolution Neural Network

Confusion Matrix
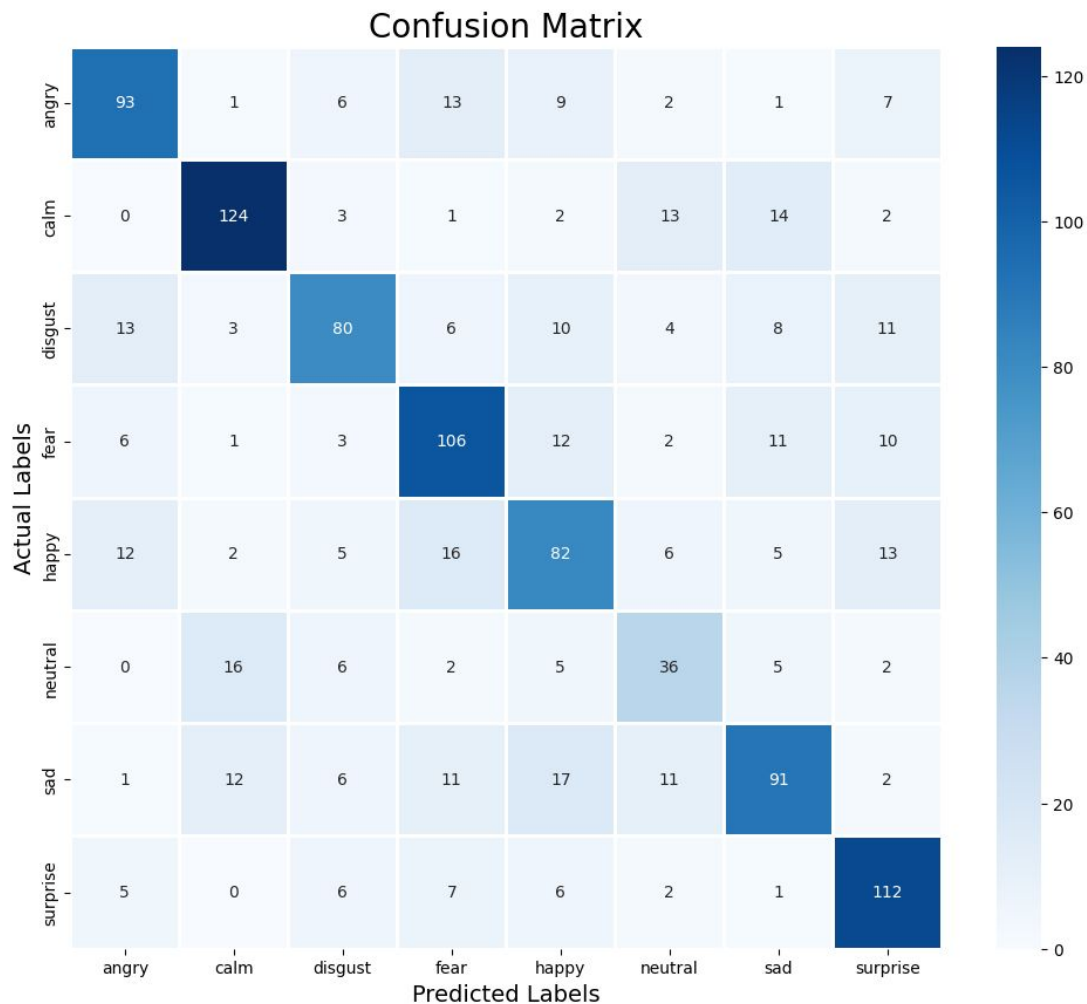
Convolution Neural Network

- Sequential
- Four Pooling and 1D Convolution Layers
- Dropout Layer
- ~70% predicted accuracy

```
Model: "sequential"

Layer (type)                  Output Shape            Param #
=================================================================
conv1d (Conv1D)               (None, 162, 256)        1536

max_pooling1d (MaxPooling1D   (None, 81, 256)         0
)

conv1d_1 (Conv1D)             (None, 81, 256)         327936

max_pooling1d_1 (MaxPooling   (None, 41, 256)         0
1D)

conv1d_2 (Conv1D)             (None, 41, 128)         163968

max_pooling1d_2 (MaxPooling   (None, 21, 128)         0
1D)

dropout (Dropout)            (None, 21, 128)         0

conv1d_3 (Conv1D)             (None, 21, 64)          41024

max_pooling1d_3 (MaxPooling   (None, 11, 64)          0
1D)
...
Total params: 557,288
Trainable params: 557,288
Non-trainable params: 0
```

Web Application - Front End

- Three HTML web pages
  - Home/Analyzer
    - Integrated with Flask
  - Emotion Tips
  - About
- CSS Styling

Web Application - Back End

- Created using Flask
- Contains preprocessing necessary for model
    - Feature Extraction
    - Scalar and Encoder
- Contains predictive model
- Routing control

Audio File (.wav)

Choose File | No file chosen

Run Analysis

Challenges/Next Steps

- Creating a model with more than one language
- Live Audio Recording
- Hosting Website

Thank you