

## **P4 Project Proposal - Emotion Recognition & Mood Prediction of Song**



### **Course**

CSCE 5214 (Fall 2020)

### **Participants**

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# Project Name, Participants, & Workflow

- Project name
  - Elevate - Emotion Recognition & Mood Prediction of Song
- Participants
  - Son Chau, Naga Sumanth, Miguel Quintana, Jongwook Yoon
- Workflow
  - Weekly meeting on Discord every Saturday and/or Sunday morning.
  - Team members are splitted into two groups.
    - Son and Miguel to work on Emotion Recognition Part.
    - Naga and Jong to work on mood classification of song.
- GitHub
  - <https://github.com/UNT-5214-P4/Elevate>

# Project Abstract

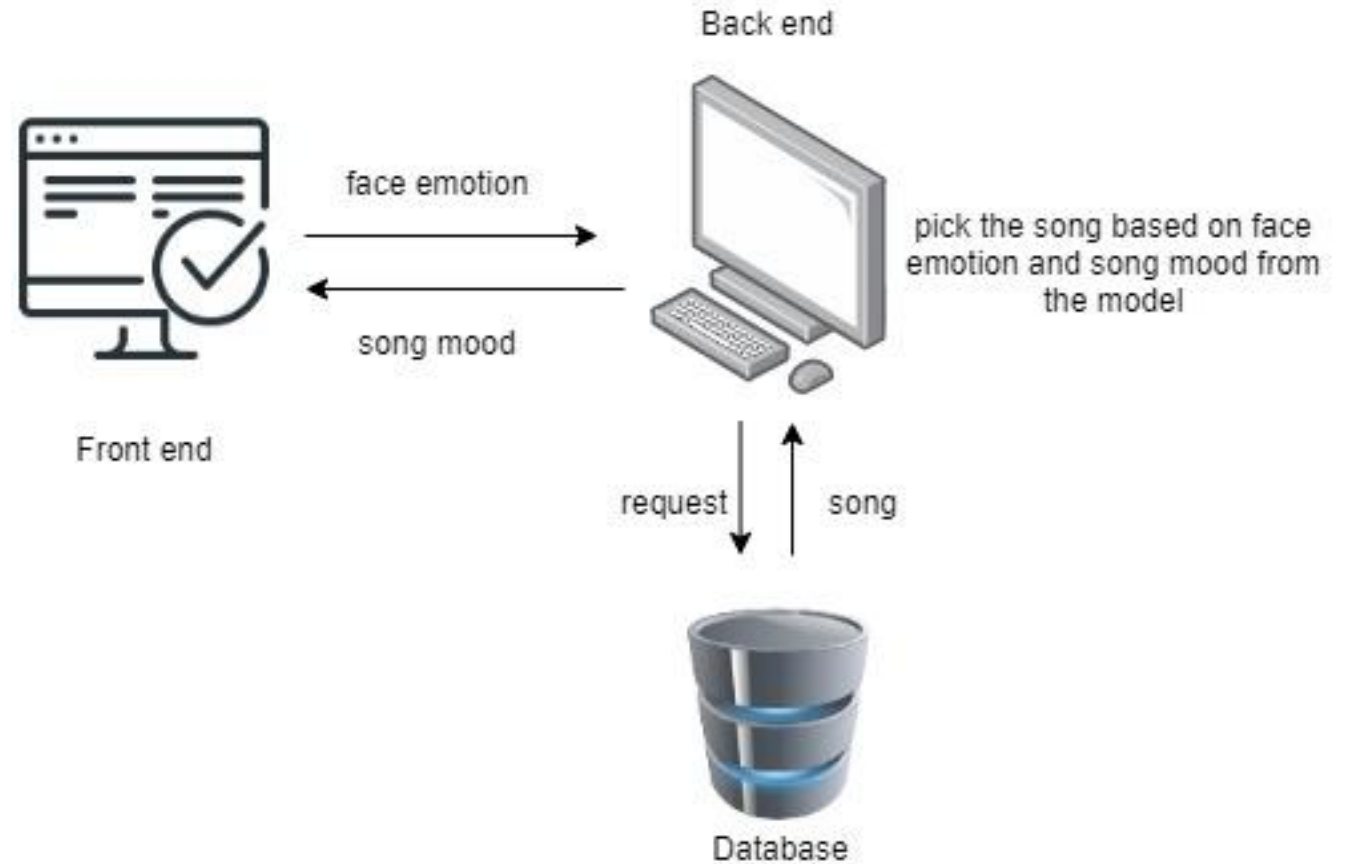
Our Project goal is to determine the emotion recognition and play a song from playlist to uplift the mood.

This involves:

1. Analyzing Video Stream and predicting an emotion. We will need to detect face from video stream and use amazon emotion rekognition API to determine emotion.
2. Build a model that analyzes an audio file and determines the mood of a song. Classify the sample playlist of songs into different moods.
3. Use emotion recognition response and play a song from classified playlist using predefined mapping between emotion <-> mood of the song.

# Overview

- Face detection with jsfeat
- Face emotion with AWS Rekognition
- Song selection based on mood



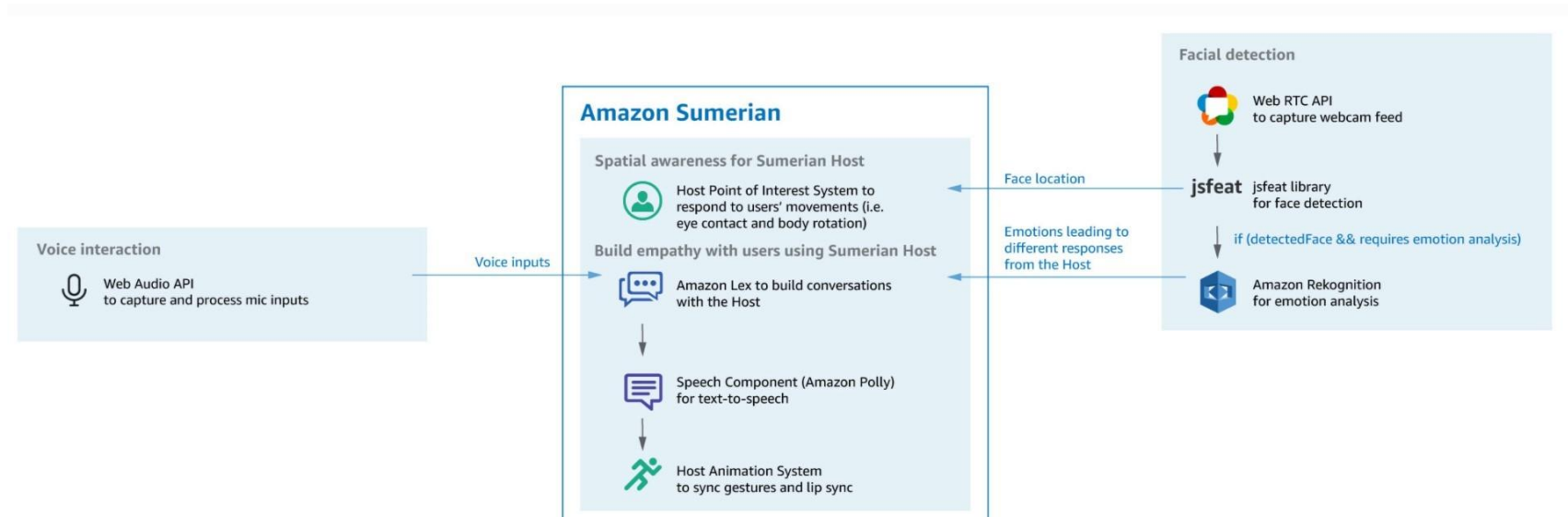
# Emotion Recognition <-> Song Mood

- Below image gives possible classifications of emotion, song mood.
- Given emotion we use the mapping below to play a song from mood classified playlist.

Song Mood	Calm	Energetic	Happy	Sad
Emotion				
Happy		✓		
Sad	✓		✓	
Angry	✓			✓
Confused	✓			
Disgusted	✓			
Surprised		✓	✓	
Calm	✓		✓	
Fear	✓			

# Front end

- AWS Sumerian for 3D host
- AWS Lex chatbot
- AWS Polly speech
- AWS Rekognition emotion



# Back end

- Python server
- Pandas and Numpy for data analysis.
- Keras and Tensorflow to build the Deep Learning model.
- Sklearn to validate the model.
- Spotipy Python Library
- API endpoint

# Technologies

- AWS Sumerian, Rekognition, Lex, Polly
- Flask
- Keras
- Tensorflow
- Sklearn



# Milestones

- Milestone 1 (Due on 11/11/2020)
  - Gather tutorial
  - Setup workplace, github
  - Work on P4 Proposal
- Milestone 2 (Due on 11/18/2020)
  - Have the two major components - emotion recognition & song classification completed.
  - Work on P4 Video Update
- Milestone 3 (Due on 11/25/2020)
  - Integrate and testing.
  - Work on P3 Report and Video Presentation.

# Resources & Related Projects

Amazon Sumerian Concierge Experience

<https://docs.sumerian.amazonaws.com/articles/concierge-experience/>

Predicting the Music Mood of a Song with Deep Learning.

<https://towardsdatascience.com/predicting-the-music-mood-of-a-song-with-deep-learning-c3ac2b45229e>