# Project Smartify

**Team 9**

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https://github.com/180D-FW-2020/Team9

# Motivations

- Were you ever disappointed by terrible music recommendations?
- Were you ever annoyed by not being able to listen to a playlist live with your friends remotely?
- Were you ever disappointed that you couldn’t control your music player from a distance?

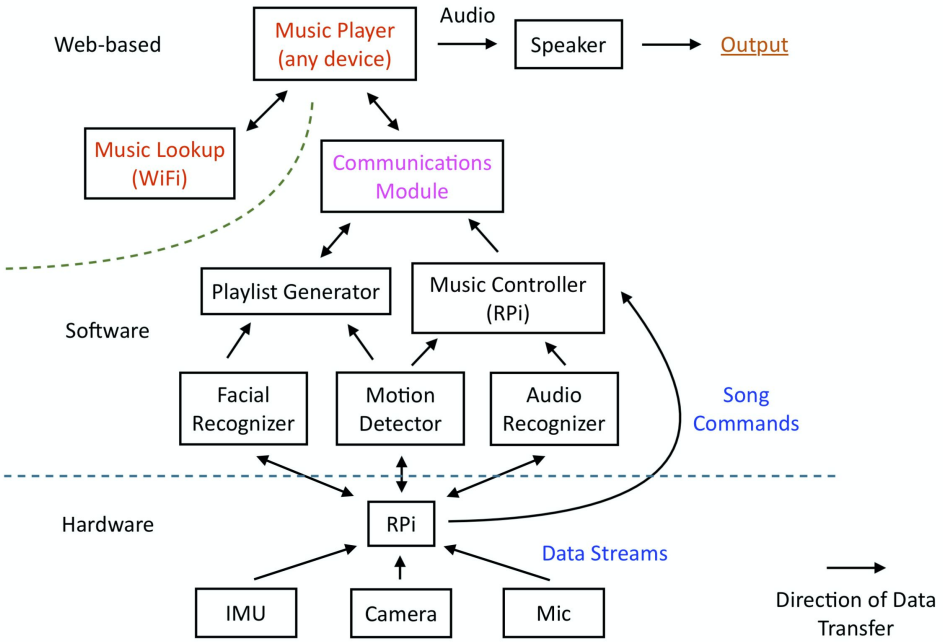
# What is Smartify?

- Smartify generates the best smacking tunes based on your mood and activities
- Smartify shares your playlist live with your friends from afar (social distancing 😉)
- Smartify lets you control your music player remotely, like potentially from the moon if you have internet access

Smar ~~Spo~~tify®

# Overall Design

- Two Main Modules:
  - Music Player (Receiver)
  - Music Controller (RPi)
- Wireless Communication between two modules
- Flexibility with multiple devices



# Work Breakdown

| | | |
|---|---|---|
| Hyounjun Chang | **Main: Module Integration**<br>**Music Player/Web API** | • During First Quarter, will be mostly working on basic Framework<br>• QA/Tester after basic prototype is finished<br>• Assist experimenting new features afterwards |
| Karunesh Sachanandani | Main: Voice Recognition<br>MQTT/Communication | • Audio recognition module, noise filtering, voice command parsing<br>• MQTT communication, JSON parsing |
| Gerald Ko | **Main: GUI, UI/UX**<br>**QA/Testing** | • GUI for player, mood detection, album cover viewer<br>• Test and build the product on different devices |
| Justin Suh | **Main: Motion Detection**<br>**Image Detection** | • Creating gesture recognition<br>• Image recognition (Emotion, maybe also gesture) |

# Relevant Research & Progress

Voice Recognition:

- Python: SpeechRecognition
- Google Web search API, CMU Sphinx

MQTT:

- JSON data transmitted as a python dict
- Parsed by the receiver to a text file

IMU:

- Threshold Recognition
- Custom Input through ML
- Send out Classification of Gesture

Pipelining

- Pandas Dataframe
- JSON parsing
- Queries/ Web APIs
- Pafy/Mutagen

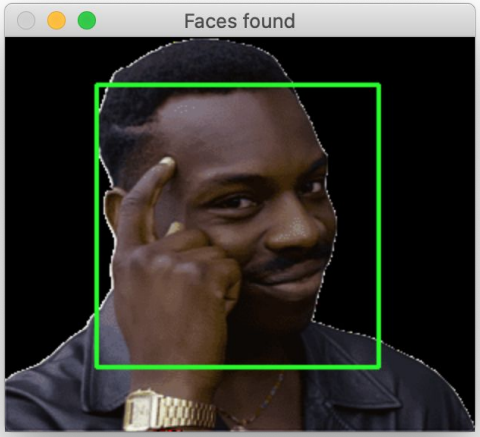
GUI, UI/UX:

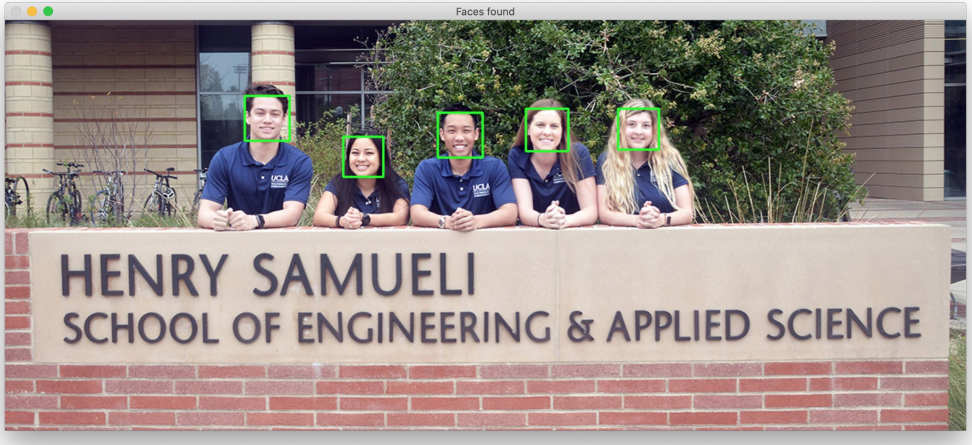
- PySimpleGUI
- Pillow
- Webcam Face/Mood Detection
- Image Viewer
- MP3 Player

# Testing Possibilities

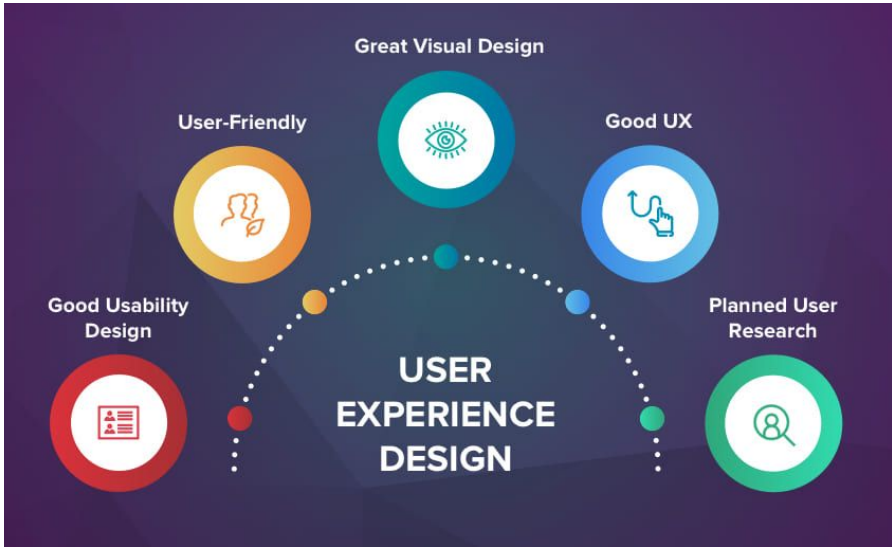
| Audio | IMU/Command | Machine Learning | Computer Vision |
|---|---|---|---|
| Command Recognition | Gesture Recognition | Data Filtering | User Facial Recognition |
| Song/Artist Name Recognition | Command Possibilities | Feedback Control (Reinforcement Learning) | Emotion Recognition |
| Ambient Noise Filtering | Noise Testing | Online Learning/Time Constraint | Gesture Recognition Assistance |

# Face Detection Tests



# User Experience




- Consistent UI/UX for all parts of Smartify
- Maximize compatibility and interface consistency across devices
- Test performance of multiple devices for different tasks
- Ensure intuitive usage for the users
- Improve performance through Machine Learning

# Proposed Timeline