Spot-a-bone  
project proposal

09/29/2022

# Overview

## Project Background and Description

|  |  |
| --- | --- |
|  | The overall project will be working with the Spotify API and being able to initiate and manipulate listening sessions. It will consist of three main stages/features. The first and base feature will be album selection via NFC, an NFC tag being mapped to an album. The second stage will use facial recognition to select the user’s playlist. The third and final stage includes hand detection to be able to play, pause, skip (etc.) songs. |

## Project Scope

|  |  |
| --- | --- |
|  | The project will be ensured to accommodate the first feature of using NFC to communicate with the BeagleBone Green and Spotify API. We hope to use stage one as the whole project scope, with stages 2 and 3 being secondary implementations depending on time, difficulty, and hardware constraints |

## High-Level Requirements

|  |  |
| --- | --- |
|  | Requirements: C language coding, Spotify API authorization and communication, Facial detection libraries, Motion recognition libraries, Model training and testing, OpenCV library. Webcam feed to BeagleBone to realize facial detection and motion recognition features. |

## Deliverables

|  |  |
| --- | --- |
|  | Working communication between the BeagleBone Green and Spotify API through the use of NFC tags and secondarily, facial and motion recognition. Also presented in a modern package. |

## Implementation Plan

|  |  |
| --- | --- |
|  | Stage 1: Research method for connection to Spotify. Establish secure connection and communication between Spotify and BBG. After, realize the connection between the BBG and NFC reader.  Stage 2: Familiarize OpenCV library for usage and machine learning. ML Model training to recognize project members’ faces.  Stage 3: Train another model for motion detection. |