Music Classifier – Singer Identifier

G1-MusicDeciphers

**Data Science Capstone Project   
Launch Report**

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Team Members:

Likhil Kumar Rachuri - [lkr46@drexel.edu](mailto:lkr46@drexel.edu)

Nandakishor Reddy Pulagam - [np689@drexel.edu](mailto:np689@drexel.edu)

Nirupam Kumar Velagapudi – [nkv27@drexel.edu](mailto:nkv27@drexel.edu)

Soujanya Navuluru - [sn863@drexel.edu](mailto:sn863@drexel.edu)

Vuthej Krishna Reddy Verama Reddy - [vv334@drexel.edu](mailto:vv334@drexel.edu)

**The System/Product**

**System/Product Name: Music Classifier – Singer Identifier**

**Introduction:**

**Background:** In General, humans tend to recognize to which genre the song belongs to and recognize which singer is singing it. This is common all over the world in different regional languages as well. Though they attempt to recognize the signer and genre based on their knowledge, it is still a vague guess. For people to know if their guess is right, they might have to get the details about that song either from google or any other source. Sometimes, we may listen to some random songs which we may like and want to know details about the song. For such cases, to reduce the human efforts to get the details of the song, we would like to build a ML model which would recognize the genre of the song and voice of the singer.

**Motivation:** Extracting music and vocal features from a song and analysis music data has been a challenging task in recent years. Understanding various features and understanding deep learning concepts is our motivation in choosing a deep learning concept.

**Goals:** We have 2 goals to achieve in this project.

Goal 1: To build a ML model which would classify the genre of the song for English and multiple languages(includes regional languages like ‘Telugu’, ‘Hindi’)

Goal 2: To build a ML model which would recognize the voice of the singer from the input feed of multiple languages including English (includes regional languages like ‘Telugu’, ‘Hindi’).

For this term, we would need to build a good data set from multiple sources, understand and analyze this data which will be further helpful in building the model.

**Deliverables:** We would like to deliver the trained machine learning model as an API end point (micro-service) which can be integrated in any application. If time, permits we will make it as end to end application.

**Highlighted Features:**

* Collecting the musical data from multiple sources and multiple languages.
* Transforming ‘.wav’ (or mp3) file to machine readable format.
* Classifying the song with respect to genre.
* Detecting the voice of the singer.
* Providing the lyrics of the song for English language (Voice to text conversion by eliminating background music by using pre-existing modules)

**Sponsor or Proxy User:** None

**Issues:**

* We have many applications or APIs which can provide the details of the song however not the wav format of that song.
* We can obtain only the preview of the song not complete song
* Since we are targeting to collect the data from multiple data sources, each source has their own unique id for the song which might leads to issues in preprocessing of the data.
* As we are extracting data from various sources, we also need to work on eliminating the duplicates entries present in the data.

**The Team**

**Team Name:** **G1-MusicDeciphers**

**Team Members and their specialties:**

As a team we wanted to extract data from various sources. Because of this, rather than focusing on a single phase within the Data-Science flow, we wanted each individual to take the ownership of extracting the data, curating and pre-processing it & finally to perform the Exploratory Data Analysis for each of the multiple data sources that have been identified. This way, we can improve our skillset on the overall process itself without limiting ourselves to one or two areas.

**Specialties:**

**Likhil Kumar Rachuri** - I previously have industry work experience on the data analysis and interpretation, which motivated to build more knowledge on the aspects and insights of data. I am having theoretically in-class and project experience on Data acquisition and pre-processing, Data analysis, machine learning, Natural language processing. I chose to work on this project with audio which is one of my interests. Previously had experience working on image data processing and modelling the neural networks(CNN). The similar but more enhanced CNN models will be used for this project. All my skill sets and interests are aligned and motivated me to work on audio data with CNN modelling.

**Nandakishor Reddy Pulagam** - I completed my undergraduate in Electronics and Communications branch in 2014. I have hands-on experience on Data Acquisition and pre-processing and Machine learning. I am working as an Intern Data Scientist at DXC Technology Applied AI Studio. I have also experience in Python, R, PL-SQL and SQL programming languages.

**Nirupam Kumar Velagapudi** - I have hands-on experience on ‘Data Acquisition and Pre-processing’, ‘Data Analysis and Interpretation’, ‘Data Mining’ and ‘Applied Machine Learning’ which would help in developing the project we are working on. I had privilege to work on deep learning project in my previous term on Image processing to detect apparels. I also have experience in working for DXC via CPT for the past year. My bachelors have been in Electronics and Communications Engineer where I have worked on various robotics prototypes and have lectured on implementing the robotics workshops.

**Soujanya Navuluru** - I have completed my bachelor’s degree in 2014 in Computer Science Engineering. I have learnt ‘Data Acquisition and Pre-processing’, ‘Data Analysis and Interpretation’, ‘Data Mining’ and ‘Applied Machine Learning’ subjects in my previous quarters. I did multiple POCs on those subjects which enhanced my knowledge in Data Science domain. I am also working in DXC as a Data Scientist through CPT.

**Vuthej Krishna Reddy Verama Reddy** -I have been able to work on various projects like ‘Extracting Data and Building Dataset from Yahoo Finance website for stock market exchange’, ‘Working on Sentiment analysis on text data from the reviews obtained from Amazon products’, ‘Image Processing to identify objects within the image’ and ‘Video Processing to monitor social distancing in public areas’. I have been taught and evaluated on the subjects like ‘Data Acquisition and Pre-processing’, ‘Data Analysis and Interpretation’, ‘Data Mining’, ‘Applied Machine Language’ which contributes greatly towards this Capstone-I course work. Along with this experience, I have also been working as a backend developer for building a Mobile Application for one of the Food Chain giant and as a data scientist for building AI Machine Learning Model for one of the International Airlines Company.

As all the team members are experienced in Agile Methodology, we wanted to implement the same in our project in order to achieve the objectives. So, this will be a self-driven approach by considering opinions from all the team members before finalizing on a specific approach. In-order to support this Agile methodology, we have scheduled daily meetings (scrum calls) to have updates from all team members to track the progress on a daily basis.

**Team Communication:**

We have scheduled meeting every day from 8:30 PM EST to 9.30 PM EST. First 15 minutes of our scheduled call will be towards the discussion of individual progress updates from team members. Next 15 minutes will be allocated to discuss the issues faced and probable solutions to tackle them. Remaining 30 minutes will be utilized for cross-knowledge sharing and to plan future tasks.

Apart from Blackboard and Outlook, we are using Microsoft Teams for our communication, meetings and files sharing. We might shift our schedule to morning hours due to conflicts with personal works.

**Team Issues:**

Our team is new to voice processing, we are meeting every day to share our knowledge and improve our skills towards voice processing.

All the members in the team do have experience in the fields of numeric, text, image and video processing but voice processing is something that we are new to. Hence the learning and implementation needs to go parallelly to achieve the outlined objectives in a timely manner.

Table of Contributions

The table below identifies contributors to various sections of this document.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Section** | **Writing** | **Editing** |
| **1** | **Project** | **All Team Members** | **All Team Members** |
| **2** | **Team** | **All Team Members** | **All Team Members** |
| **3** | **Plan** | **All Team Members** | **All Team Members** |