



Idea – [Personal Stereo](#) – The Personal Intelligent Music Information Retrieval System.

Digital music become widely available from different media sources like internet radio, digital storage devices, internet music, DLNA sources etc. With vast amount of digital music accessible to the end users, there is a need of developing tools to effectively and efficiently retrieve and manage the music of interest to them. Audio Processing with Machine Learning models is an interesting topic with many potential applications that we can offer to the end users. With that opportunity, we can provide plenty of information alongside to the end user while playing the right music for every moment.

The system supports below features:

- Automatic Audio Classification/Tagging
 - I. It pre-processes and extracts the features from the music samples and creates a metadata for the audio(for latter purpose) and then apply the classification algorithm (Machine/Deep Learning) on it to get the result e.g. genre classification, instrument recognition, artist identification, emotion detection, etc.
- Audio Fingerprinting
 - I. Determines the digital summary of the audio e.g. tonal analysis (e.g. melody and harmony) and rhythm or tempo analysis, etc.
- Audio Recommendations
 - I. The music recommendation engine acts on the user's past listening history to build customized recommendation lists.
 - II. It predicts the listening preferences by using the deep learning models.
 - III. Automatically recommends similar search for audio files to listeners.
- Audio Transcription
 - I. Speech Recognition
 - II. Lyrics Identification.
- The Other Important Features
 - I. DLNA Playback – Implements the UPnP protocol to allow the device to act as DMC, DMR, DMS, DMP, etc.
 - II. Internet Radio Playback – Allows browsing and playback of internet radio stations. Radio stations are categorized based on their Genre, Languages, Countries, etc.
 - III. Additional Music – Allows playback from USB connection and devices like smartphones, computers, etc.



- IV. Favorites – List of tracks that user thumbs-up for.
- V. Play Timer – User sets-up the play timer that is triggered with automatic playback of pre-configured tracks initially. Further, it intelligently decides what to play next based on the recommendations.
- VI. Content Indexing – Allows users to browse the music content based on their classification - Artists, Albums, Genres, Tracks, Languages, Countries, etc.
- VII. Play Queues – Current and Previous Play Queues.

General steps that it performs:

1. Load audio files - Background task
2. Extract features from audio - Background task
3. Convert the data to pass it in our deep learning model - Background task
4. Run a deep learning model and get results - Background task
5. Use the extracted information to display the content description - Front End task.



Plan to bring it to life.

Got this great idea and I am excited about getting it out into the world, imagining the difference it could potentially make for the music lovers. I am ready to begin to get it out into the world and to move from an idea into action.

This project is at initial stage. Though I have an idea how it should look like when it goes to the market. There are different technologies that Google offers to take advantage of e.g. ML Kit, Tensor Flow Framework and the other infrastructures to be able to use to train the Machine Learning Models. I would seek time-to-time help from Google expertise in different ways whenever I get a chance to interact with them.

Plan is to follow below roadmap to get going. Please bear me as the details mentioned below are at very high level.

Step #1: Explore the Idea — Come up with new big features. [December 2019]

This is the idea-generating stage where I would be either bouncing between the number of different ideas, or would be looking to explore more into the identified and tagged ideas.

Step #2: Research — Gather supporting data and examples to support my idea. [December 2019 – January 2020]

I would need a specific amount of research time to move to the next step. So that, I should feel I have enough to start and stop collecting the further details.

Before moving forward, it is critical to understand it better. Gathering research and supporting data on the topic, and understanding what else can be brought forward which is similar. I would be gathering supporting evidences and would be looking for the sources that will allow me to go deeper into my topic.

Step #3: Roadmap — Build a project roadmap. [January 2020]

With this step, I would define the milestones, high-level tasks and their estimations. I would break down those tasks into detailed smaller chunks to deliver those as components. The critical paths, gray areas can be determined in this step.

I will ensure the plan includes key milestones and specific deadlines to keep that accountable.



Step #4: Development — Idea Implementation. [February 2020 – April 2020]

Having project roadmap and a list of tasks and timelines associated with it, I know now it is the go time.

Step #5: Optimization — Make it work faster and better. [April 2020 – May 2020]

Optimization and Validation Stage.



About Me.

I am [Sachin Jegaonkar](#). The Professional and an Individual Contributor. Passionate about Research and Development type of work. Contributing some of the open source projects. Working on some of the projects, which currently are in ideation phase mainly by using Blockchain and/or Machine Learning technologies.

- I. [Marketplace Solution](#) – A distributed ledger technology based cattle marketplace solution
- II. [Crop Insurance Solution](#) (Private Repository) – Decentralized Crop Insurance Solution
- III. [Micro Lending Platform](#) – Decentralized, Democratized, Transparent Micro-Lending platform based on Block chain

I am enthusiastic and have an exposure to work on Android and Cloud development platform.
