



# SMART RASPI MP3

## SENIOR PROJECT 2

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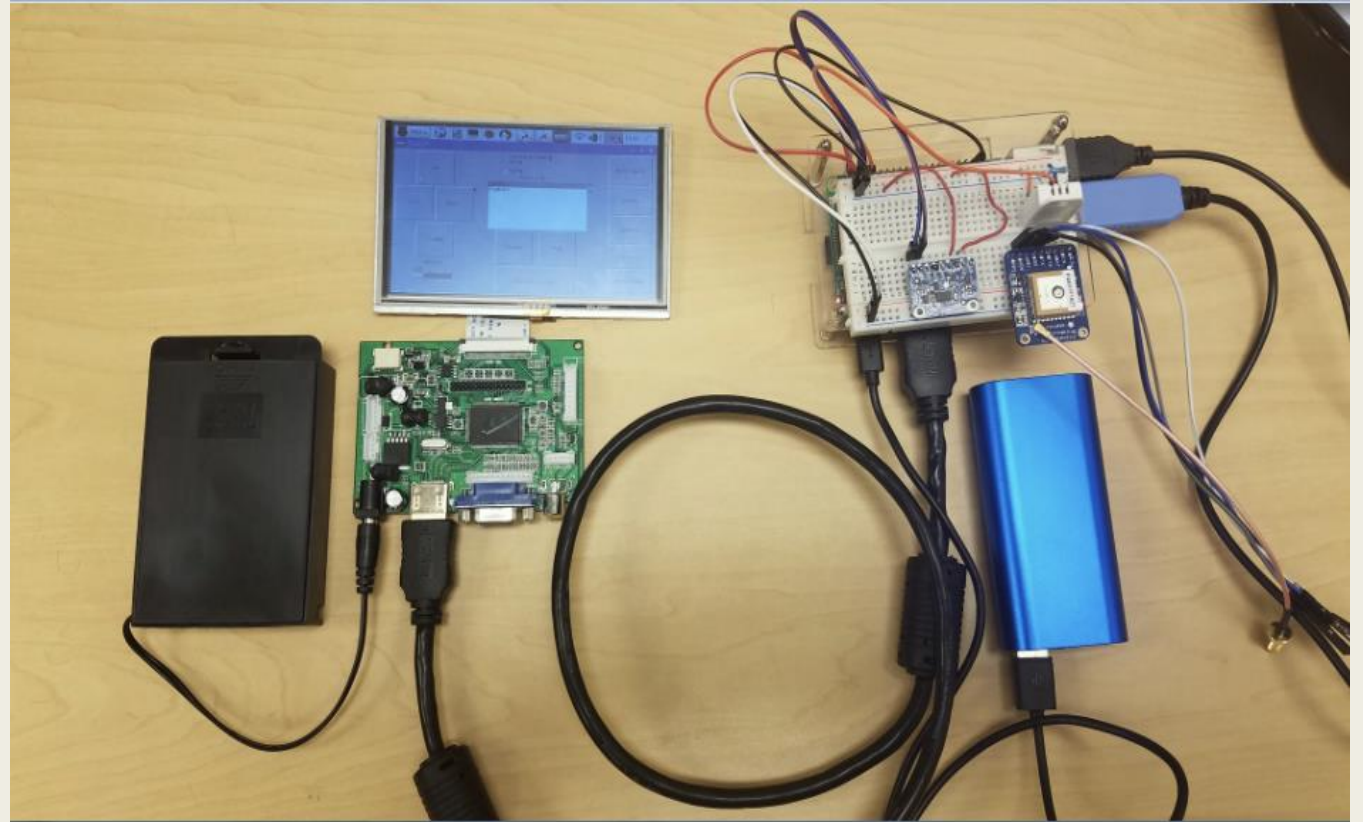


# Project Overview

## ■ What is the smart raspi mp3?

*Uses a raspberry pi and external touchscreen for controlling a basic mp3 player that allows the user to listen to locally stored music on the raspberry pi*

- Navigate through library of music
- Create/Delete playlists
- Edit playlists
- Play/Pause songs
- Adjust volume
- Display song/artist being played



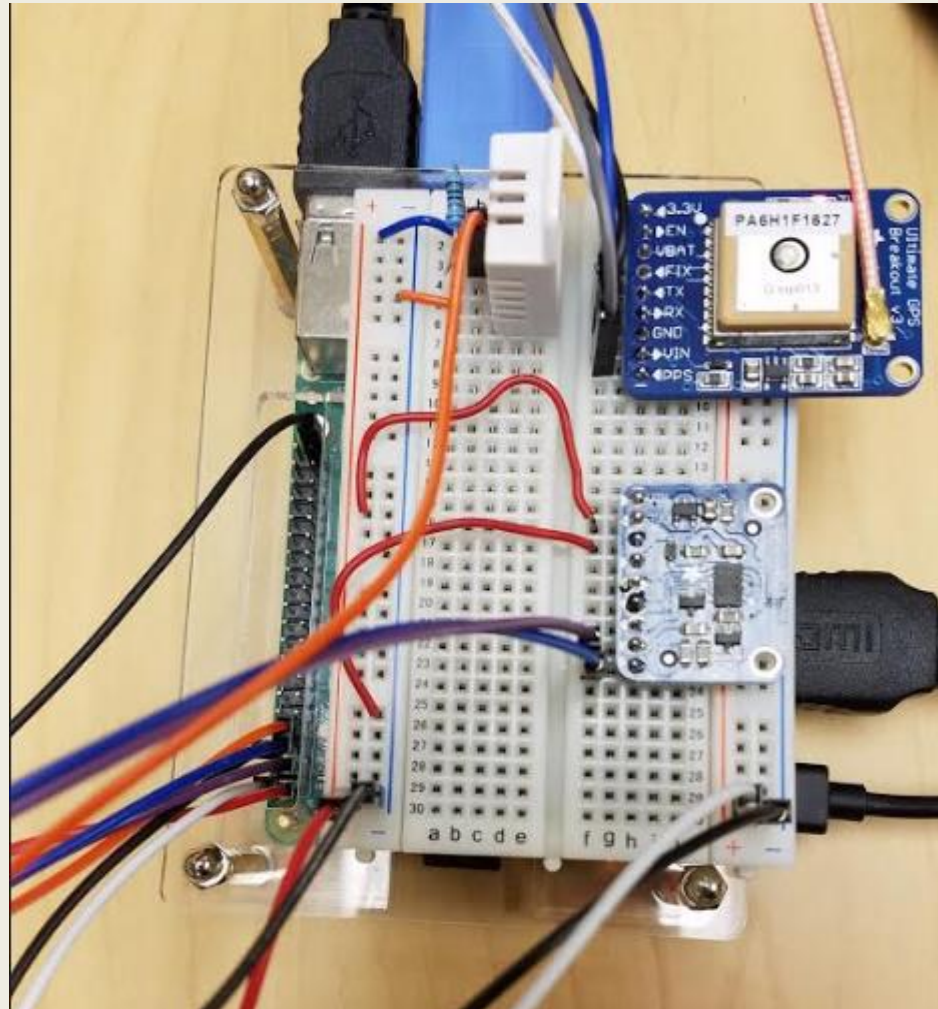
## What makes it so smart?

- Ability to dynamically play songs based on the users general habits, tendencies, and behavior using machine learning algorithms.



# How?

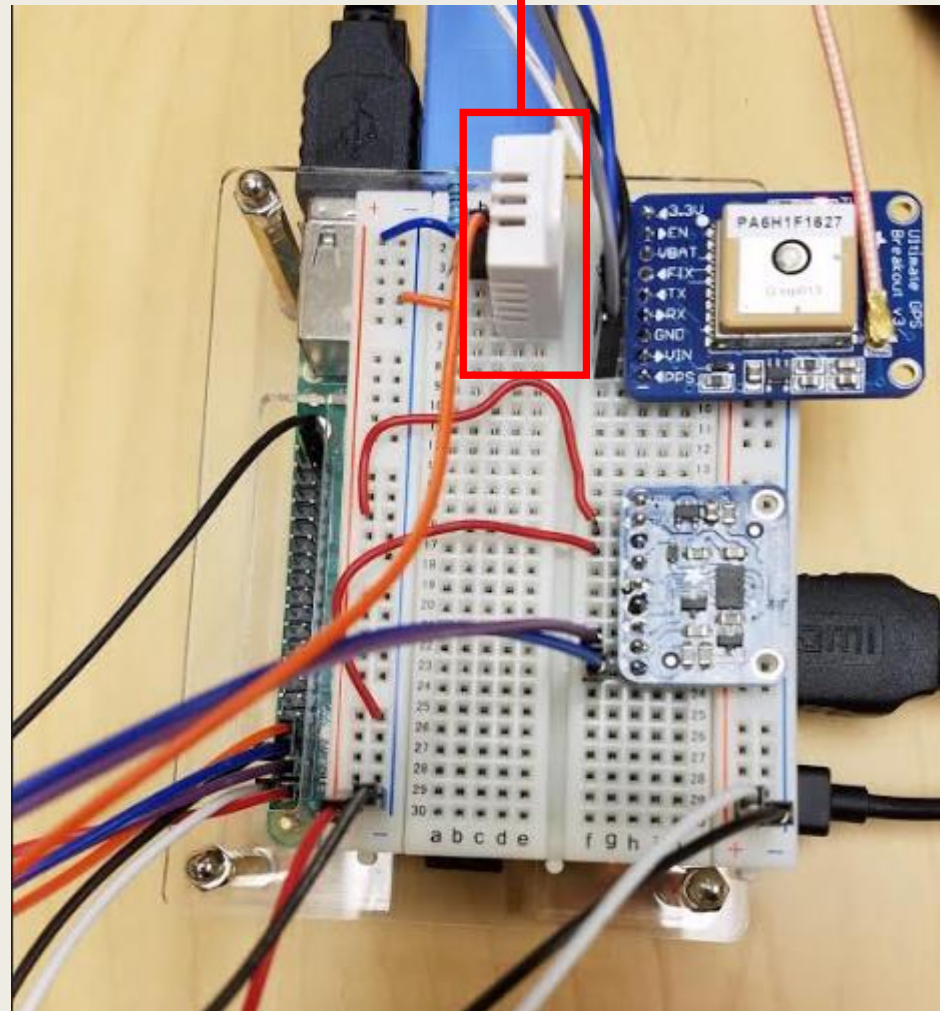
*Hardware and software to gather temperature, location, movement, day, time, song and artist*



# How?

*Hardware and software to gather temperature, location, movement, day, time, song and artist*

Temperature

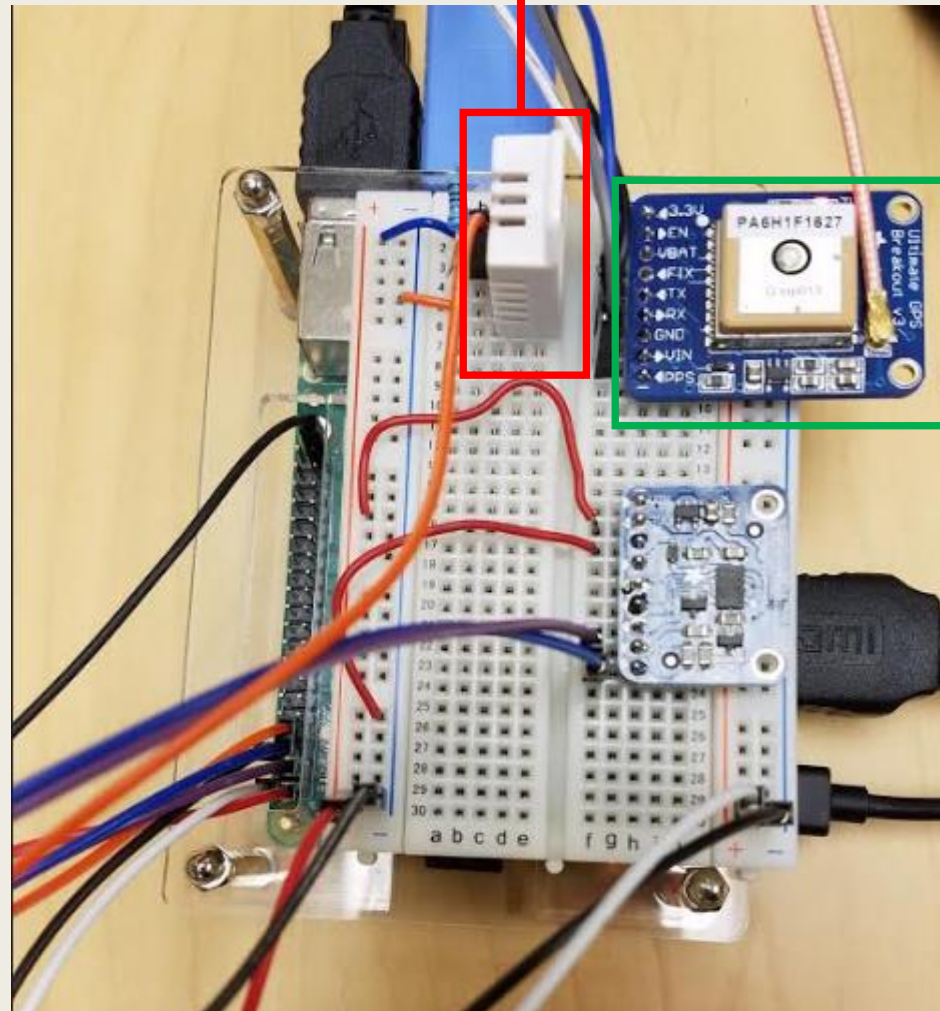




# How?

*Hardware and software to gather temperature, location, movement, day, time, song and artist*

Temperature

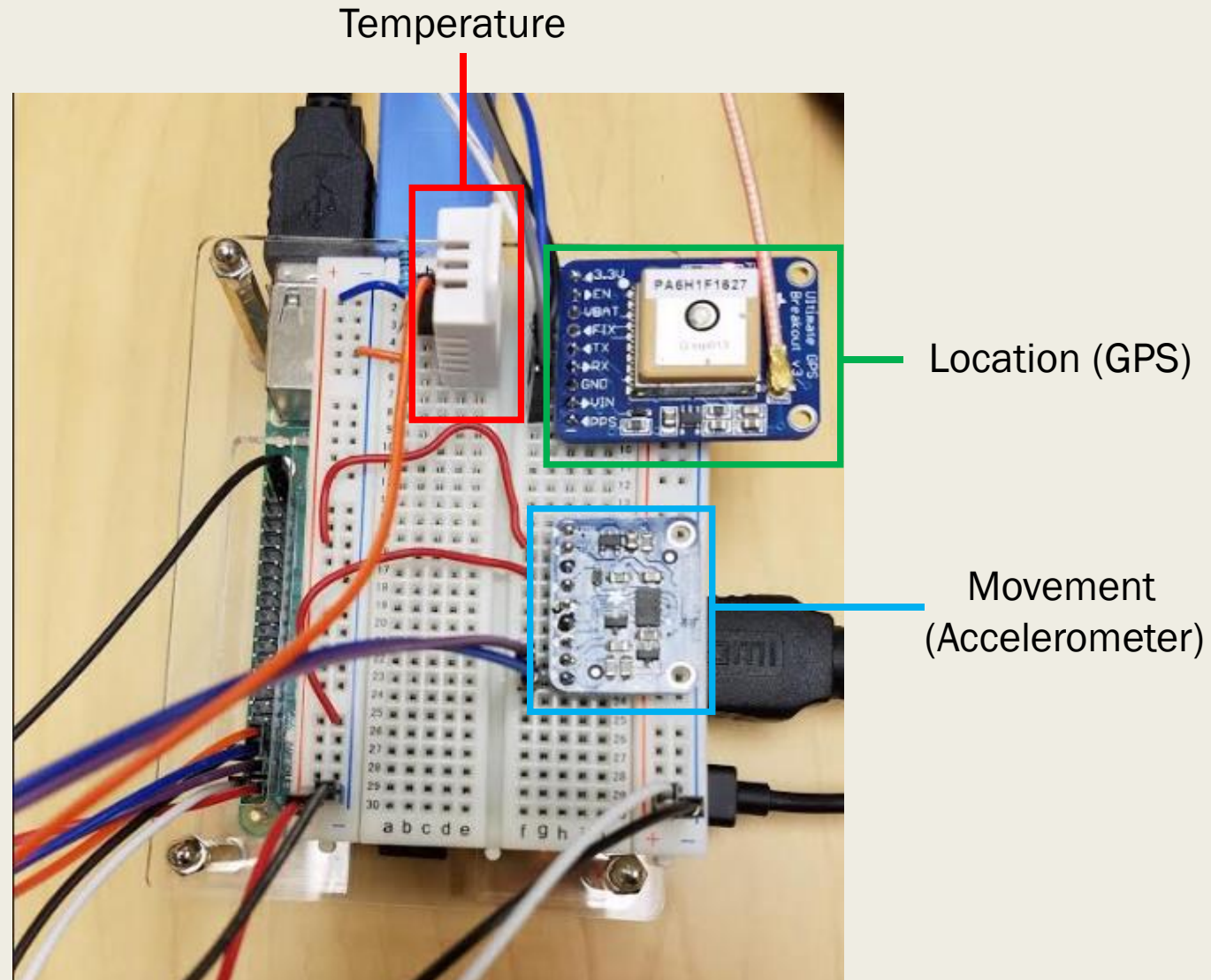


Location (GPS)



# How?

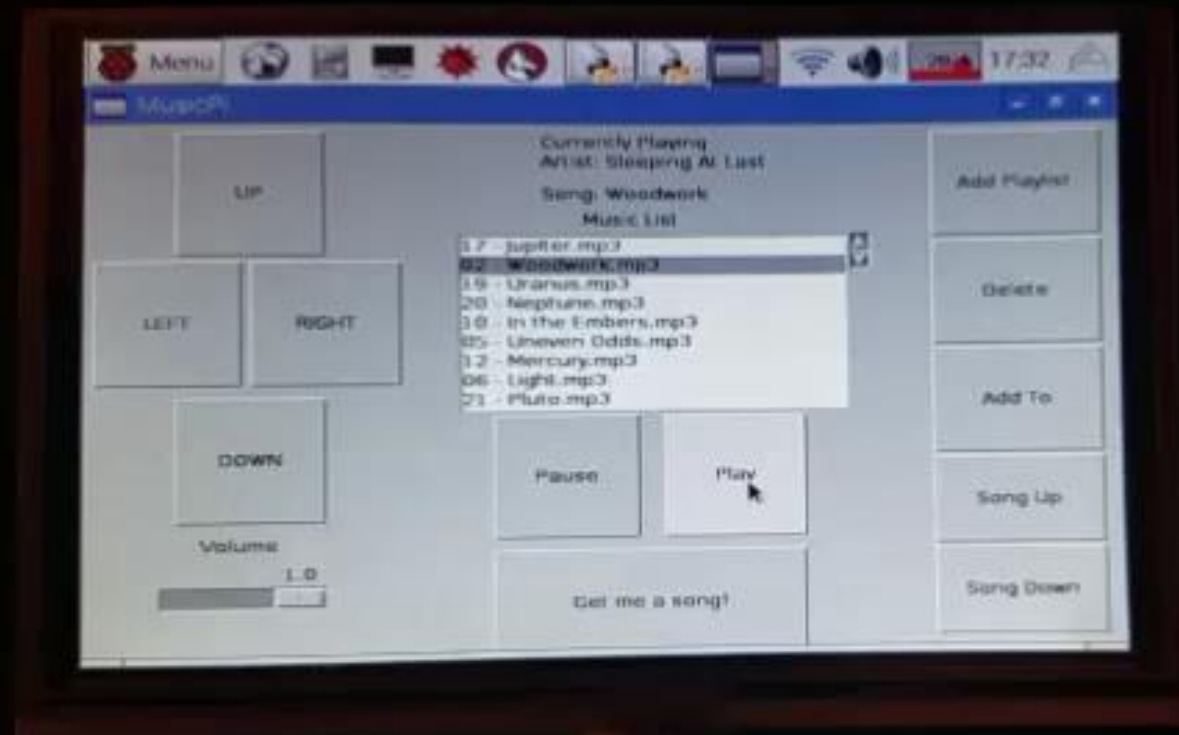
*Hardware and software to gather temperature, location, movement, day, time, song and artist*



# How?

- When the user plays a song manually, data is written to a database file
- Using WEKA library within python, we train the data in the file with machine learning algorithm
- When user wants to get a predicted song
  - *Collect current users data, similar to how we gather the data with manual selection*
  - *the player uses the trained algorithm with the current users data in order to predict the song.*
- Keeps track of songs played in the past hour to reduce same songs being played







# Testing Data

-A total of 7 algorithms that were tested to find the most accurate prediction

- J48

- Decision Table

- Random Forest

- Bayes Network

- Random Tree

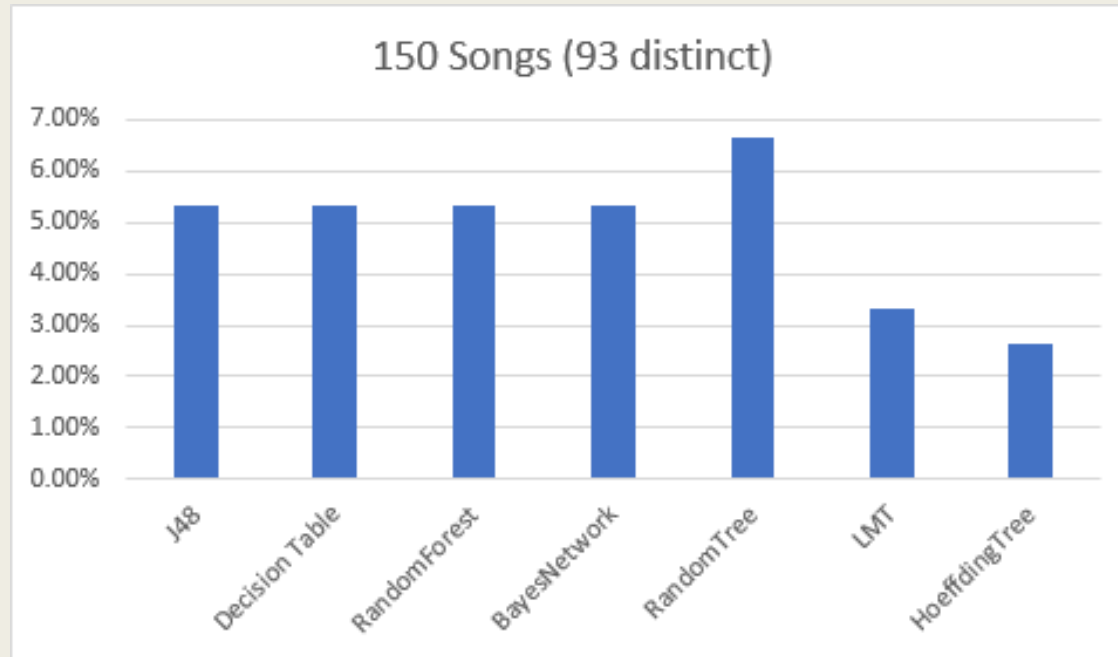
- LMT

- Hoeffding Tree

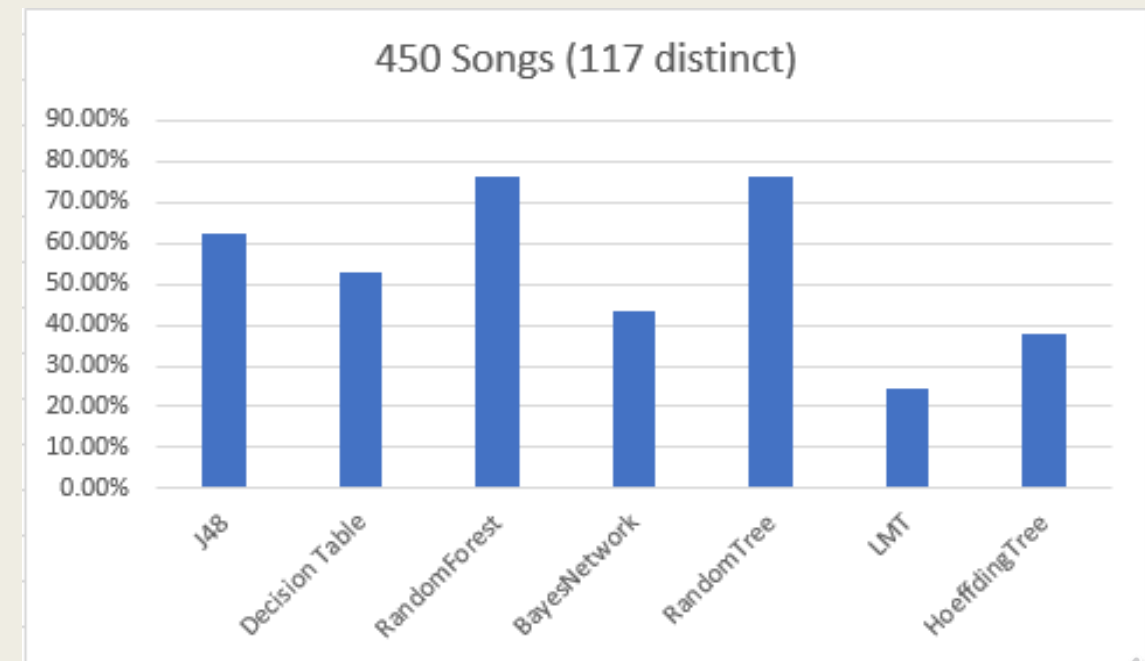


# Weka Results

Sample 150 Songs

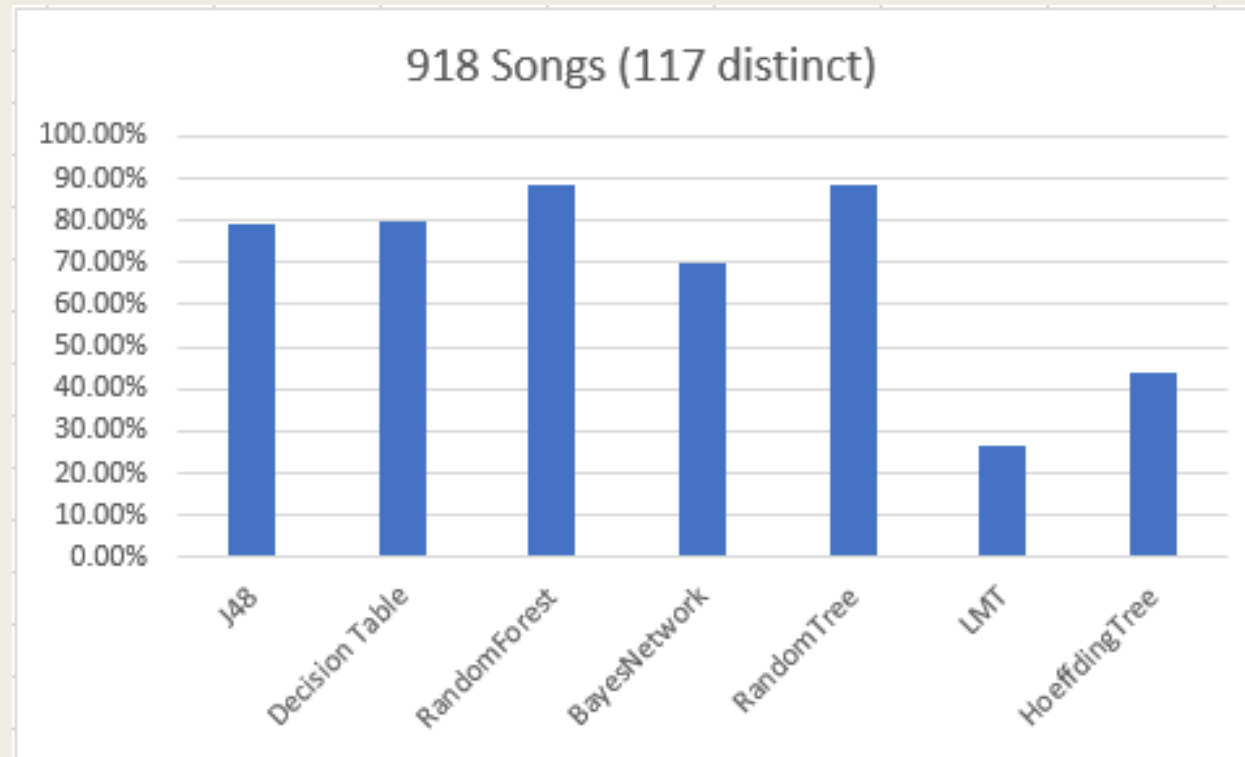


Sample 450 Songs



# Weka Results Final

Sample Size 900 Songs



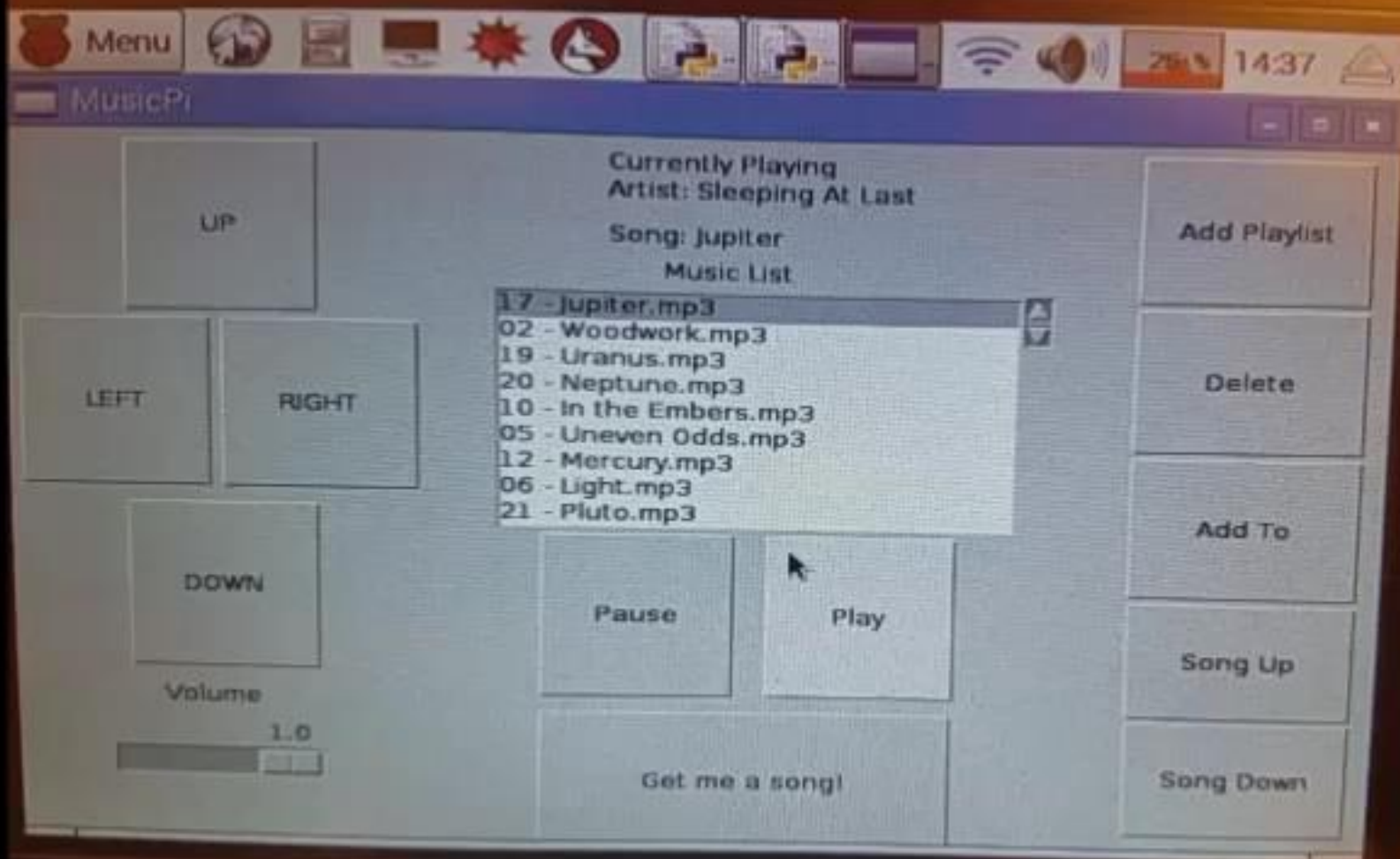
-RandomForest/RandomTree consistently the same

-Most accurate prediction  
88.67%

-RandomForest algorithm used

-The more songs played, the better the device gets!





**Thank you!**

