

AMP

Automatic Music Player

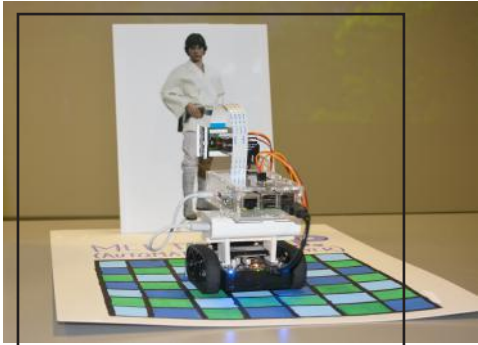
AMP utilizes computer vision to identify fictional characters and sing tones associated with said characters.

Performative and interactive aspects are incorporated so as to curate a performance.

Implementation

Our implementation process began with collaborative brainstorming on potential functionalities for AMP which included the following ideas:

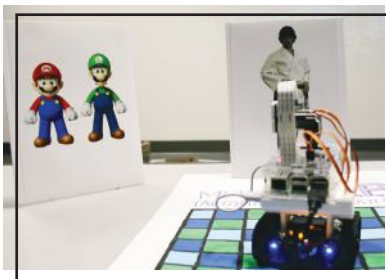
- ✗ roaming around set boundaries while seeking to identify the fictional characters – *this idea was abandoned to avoid excessive wait time while AMP was searching*
- ✗ programming AMP to move from subject to subject along a pre-determined path – *this idea was abandoned due to lack of audience participation*
- ✓ setting AMP in a stationary position and allowing audience members to choose the fictional characters they wanted AMP to perform – *this idea was selected to avoid wait time and encourage audience involmnet*



This image displays AMP preparing to perform the DARTH VADER Theme Song upon recognizing Luke Skywalker. AMP is stationed upon a dance floor on which it will perform a dance while singing.

We then learned how to code the tones for each note that AMP would sing once a face was recognized.

The process required strenuous trial and error on how to adjust tone, pitch & rate of each note.



Once the music was created – it was time for AMP to learn how to dance. We programmed AMP to do a two-step dance move while simultaneously singing. All this would occur only when the “if” statement that was programmed to detect faces read true.

Final Results

Our team successfully carried out our mission to have AMP sing and dance a song associated with the object in front of it. Although the execution was done through recognizing the number of faces in front of the PiCamera rather than specifically identifying the distinct characters themselves, we believe we can improve this project by training AMP through cascade files to recognize the specific faces of Luke Skywalker and Mario & Luigi, then play the associated performance based on which face was identified.

- Song #1 (DARTH VADER Theme Song) Plays when AMP detects 1 face
- Song #2 (Mario theme song) Plays when AMP detects 2 faces

Distribution of Labor

Chloe Hopen & Janet Diaz
Coded AMP’s functionalities

Steven Howard
Provided Documentation

References

Inspiration derived from:

- > “Super Mario theme song w/ piezo buzzer and Arduino”
https://www.youtube.com/watch?v=-kkx-s_fekWM
- > Arduino Tutorial on how to program notes
<https://www.arduino.cc/en/Tutorial/PlayMelody>
- > Rodger Luo’s GitHub Profile
<https://github.com/RodgerLuo/robotic-vision>

Gallery



scan to watch
AMP in action

[youtube.com/watch?v=BJVWU1eL_4I](https://www.youtube.com/watch?v=BJVWU1eL_4I)