

Checkoff Checklist: Voice controlled car system

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1-Commitment:

Modules:

- Feature Extraction Module:
 - Audio Sampling module: (Driss)
 - XADC module for digitizing audio input
 - Downsampling module
 - XFFT
 - Feature extraction: (Ekin)
 - Obtain a feature vector using any of the method described in proposal
- Feature detection module: (Driss)
 - Basic euclidian distance module measuring distance of audio input to training sample
 - Should be able to detect at least one command by playing back a training sample as voice input.
- Car System module: (Ekin)
 - Car FSM
 - Include training mode to store compute and store feature vectors of training samples.
 - Read from SD Card images to be displayed for each state of the Car FSM (Driss)
- Video output: (Driss)
 - Read images from SD card and output through VGA.

2-Goals:

Modules:

- Feature Extraction Module: (Ekin and Driss)
 - Compute MFCC of audio input
- Feature detection module: (Driss)
 - Being able to detect a set of at least 5 commands by playing back one of the training samples as voice input.
 - Should compute euclidian distance between MFCC feature vectors
- Audio output: (Ekin and Driss)
 - Read audio files from SD card and output to an external DAC.

3-Stretch goals:

Modules:

- Feature detection module: (Driss and Ekin)
 - Using a more robust detection method than Euclidian distance, such as DTW or a probabilistic/statistical model, being able to detect spoken commands.
- Video output: (Ekin and Driss)
 - Display the FFT of the audio input as the user is speaking.