

Project Objective

- Implement machine vision technology in order to be able to track motion and interaction with a projected image.
- The end goal is to build a stand alone system than can project a playable instrument.

Team organization

Eric Cristobal: Machine vision calibration. Jeremy Walker: Schematic Circuit Design and PCB Layout Terad Alturkistani: Audio control and communication algorithms

Bibek Adhikari: DMD projection system

Note	Octave	Frequency (Hz)	Wavelength (mm)
С	4	261.626	1.301
C#/Db	4	277.183	1.228
D	4	293.665	1.159
D#/Eb	4	311.127	1.094
E	4	329.628	1.032
F	4	349.228	0.974
F#/Gb	4	369.994	0.92
G	4	391.995	0.868
G#/Ab	4	415.305	0.819
А	4	440	0.773
A#/Bb	4	466.164	0.73
В	4	493.883	0.689
С	5	523.251	0.65

Pocket Media Studio

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Approach/Hardware

- Mixed signal processor (MSP430) for data processing and system control via I2C communications
- Pixy2 CMU-Cam for machine vision and motion tracking
- Digital Micromirror Device (DMD) for projection of various instrument layouts along with DLPC microcontroller to manage projection circuitry
- Optical Engine to power DMD circuit and create the projected image
- Digital to Analog conversion system for audio production







Fall quarter progress

- Chose high-level components and implemented into Eagle library
- Began constructing Schematic with individual
 - subsections for future PCB layout
- Audio production code finished
- Started machine vision programming with pixy2 camera and EVM
- Began Development of projection code
- Determined octave, frequency, and wavelength
 - for each note to be made (shown in chart)

Future goals/development

- Finalizing prototype with EVM's to integrate
 - all subsystems into one circuit
- Build standalone prototype without EVM's
- Transfer standalone prototype to PCB and
 - enclose device in CNC made case

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