T01
Synthesizer Glove

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Nicholas Sayre
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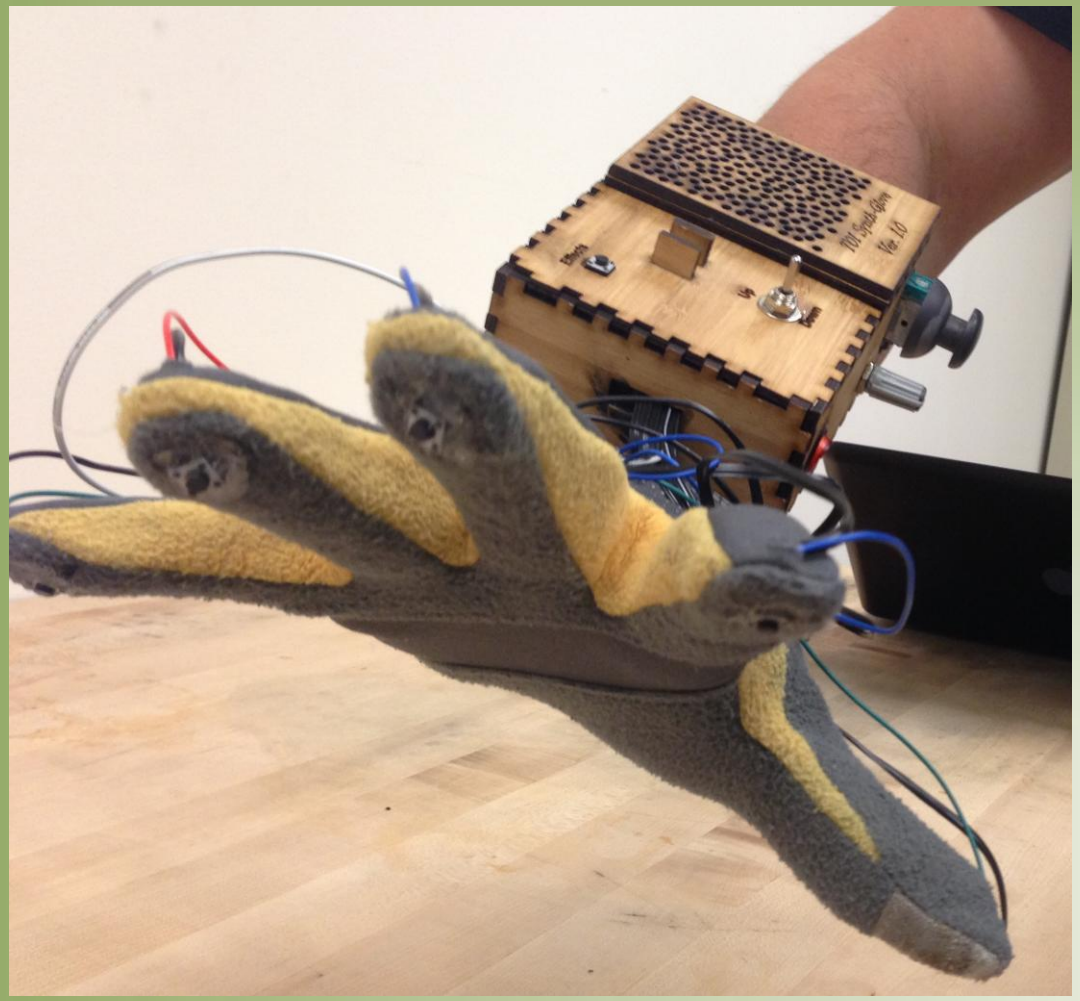
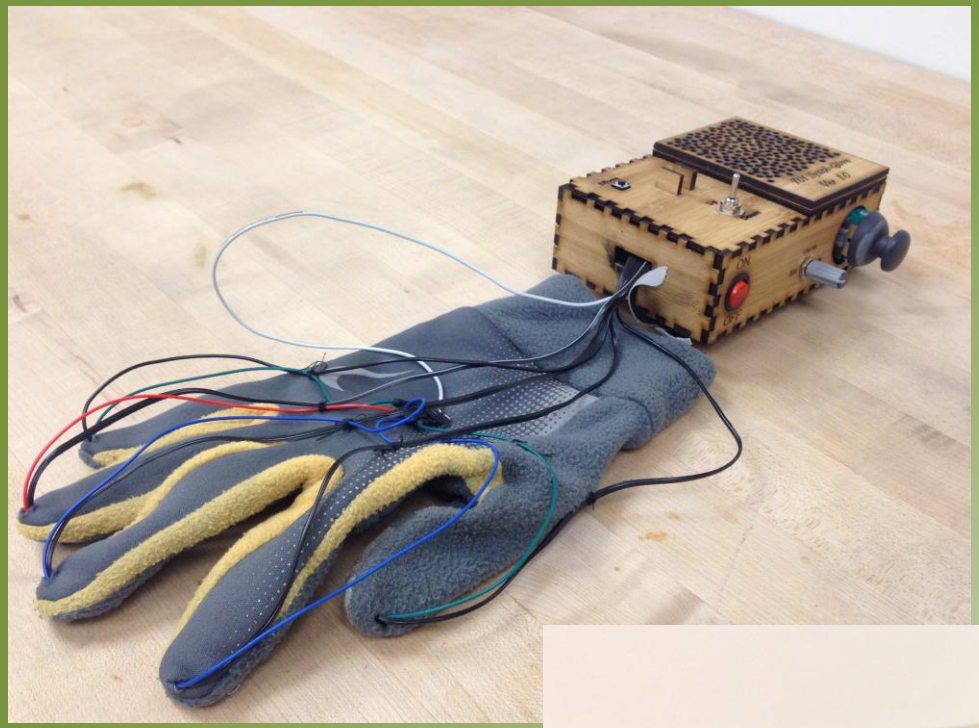
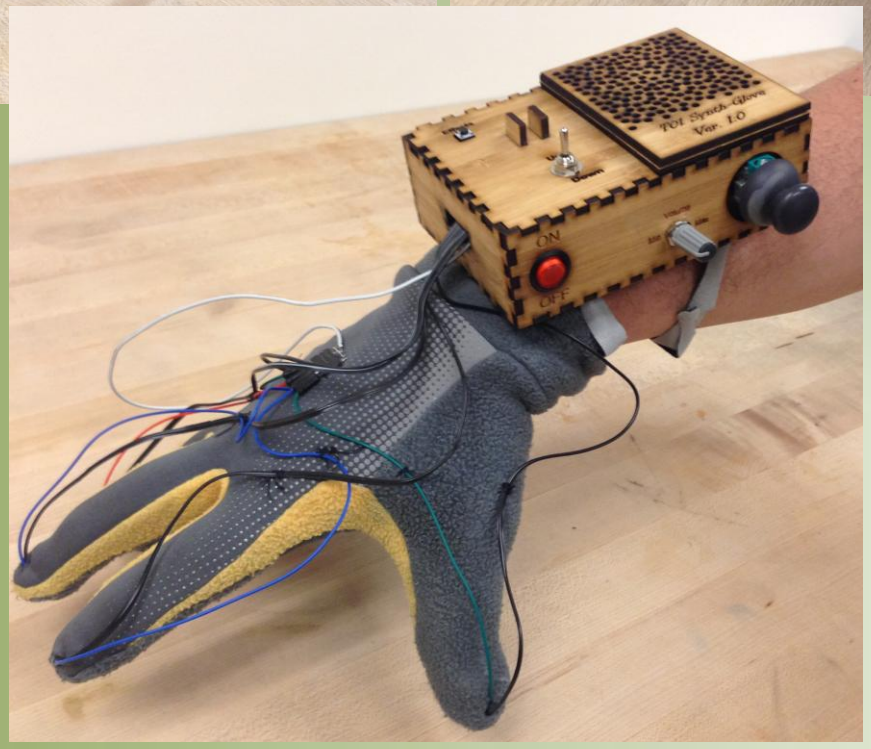





Effects
Up
Down
ON
OFF
TOI Synth-Glove
Ver. 1.0

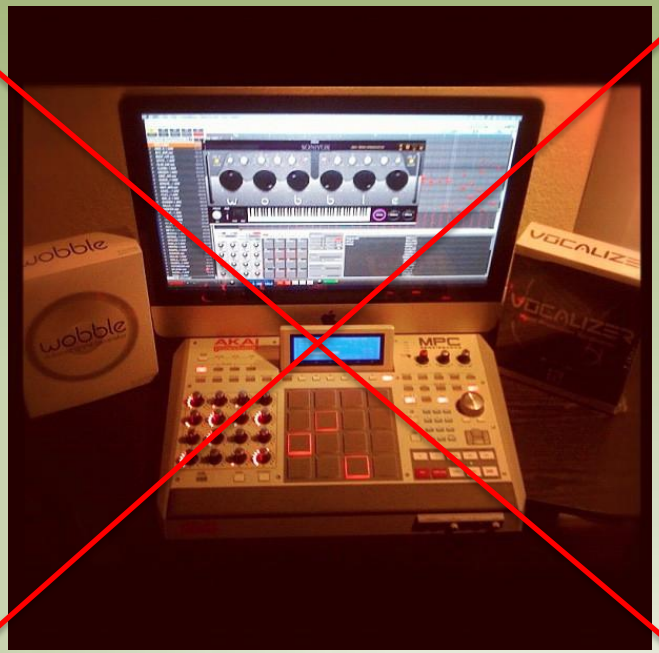

TOI Synth-Glove
Ver. 1.0
ON
OFF

Motive

Goal

Alternatives

Approach

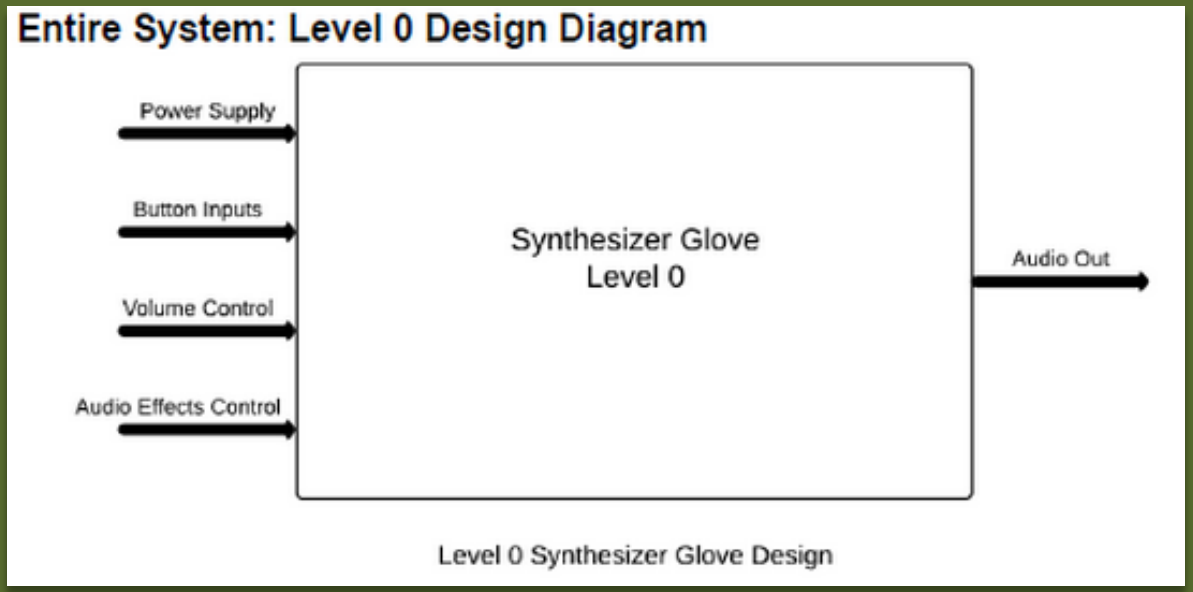


Requirements

System will be capable of altering the produced sounds.

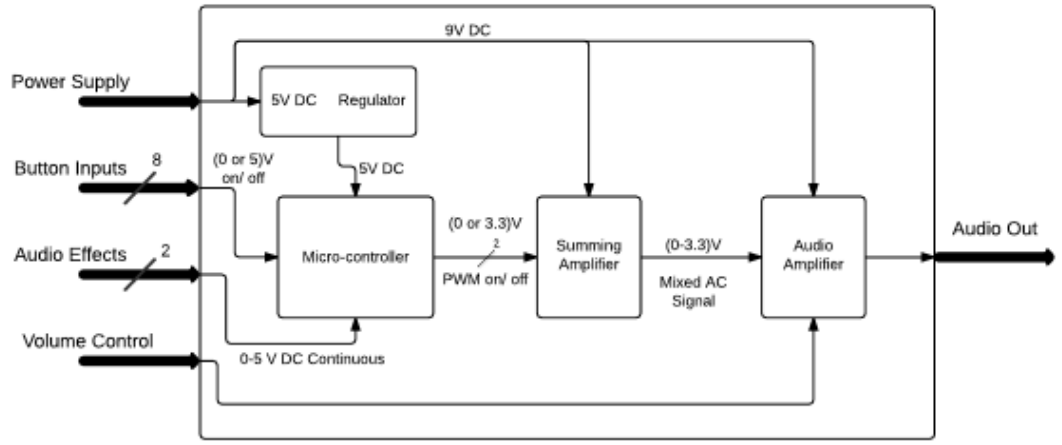
System must be wearable on users hand or forearm.

Design
Level 0



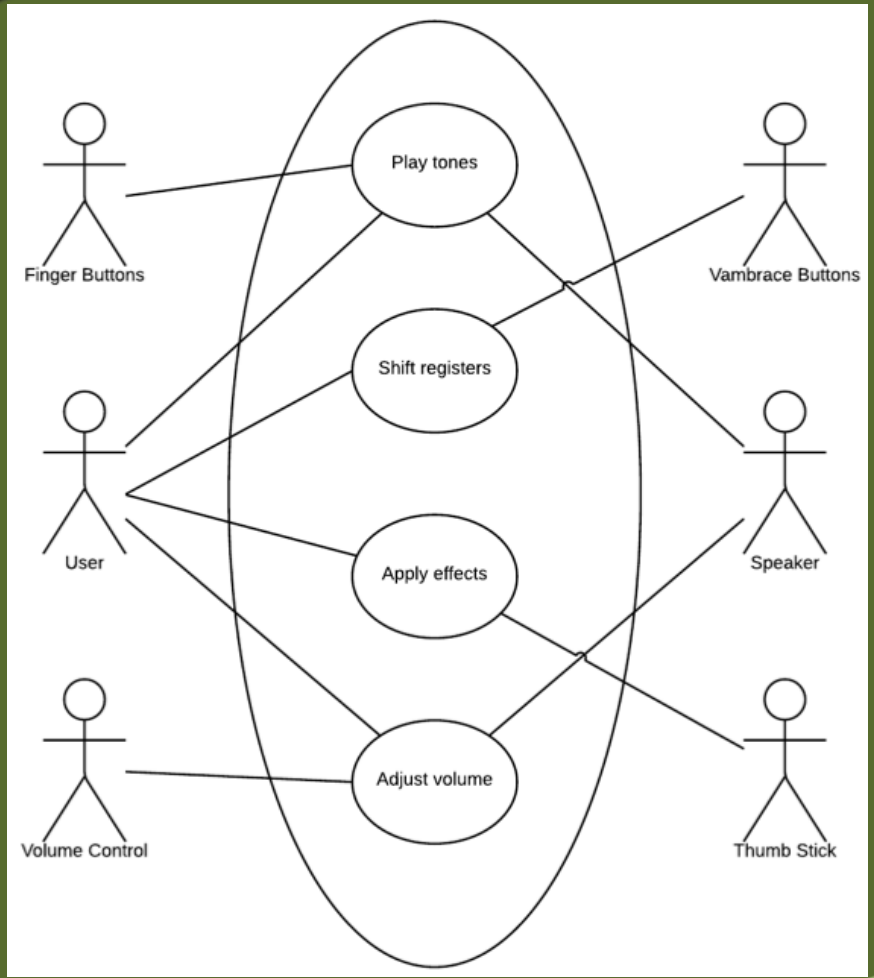
Design
Level 1

Entire System: Level 1 Design Diagram

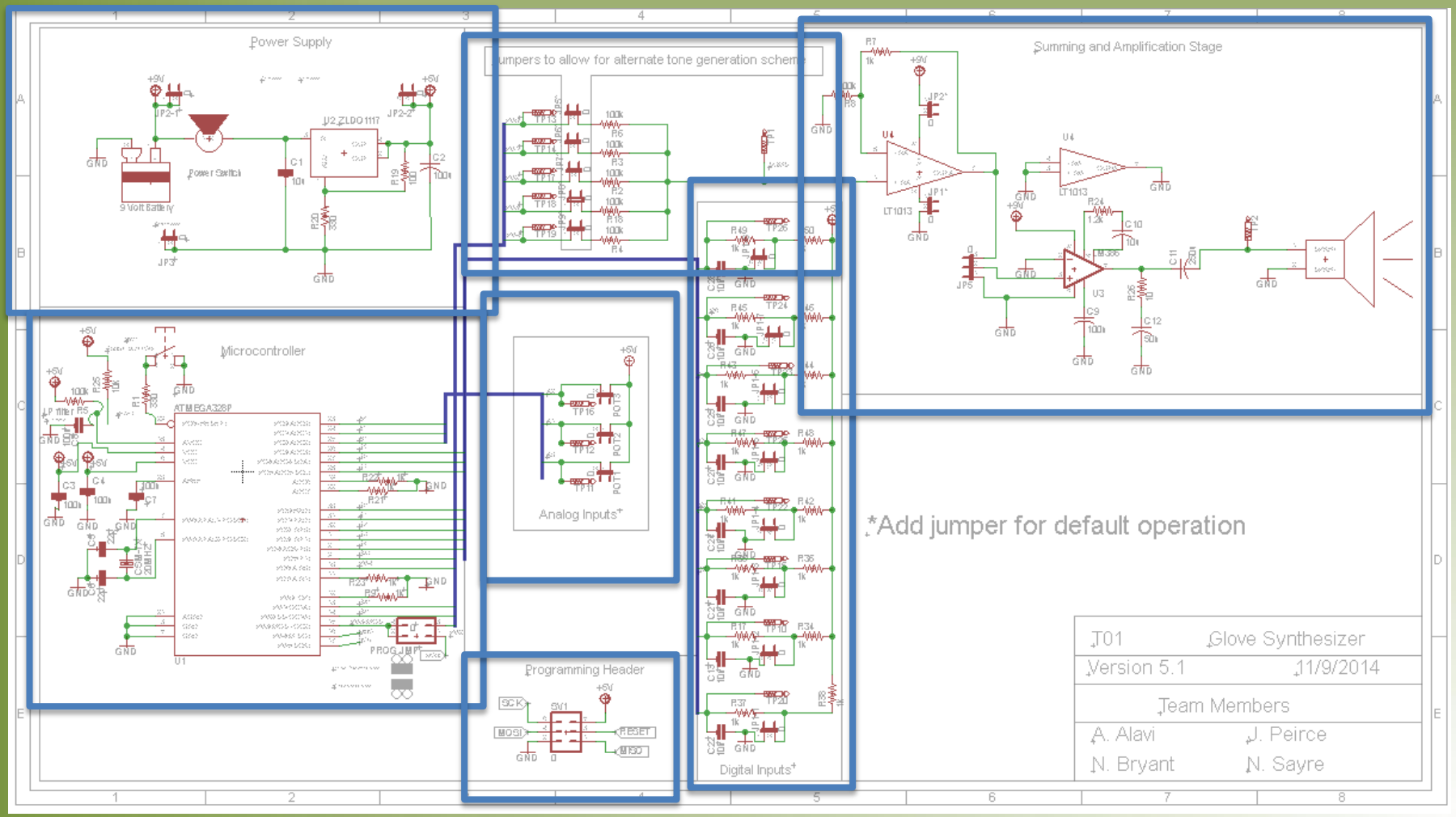


Level 1 Synthesizer Glove Design

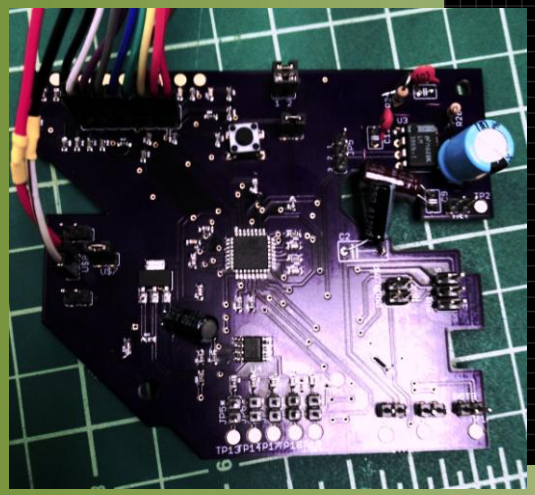
Use Case

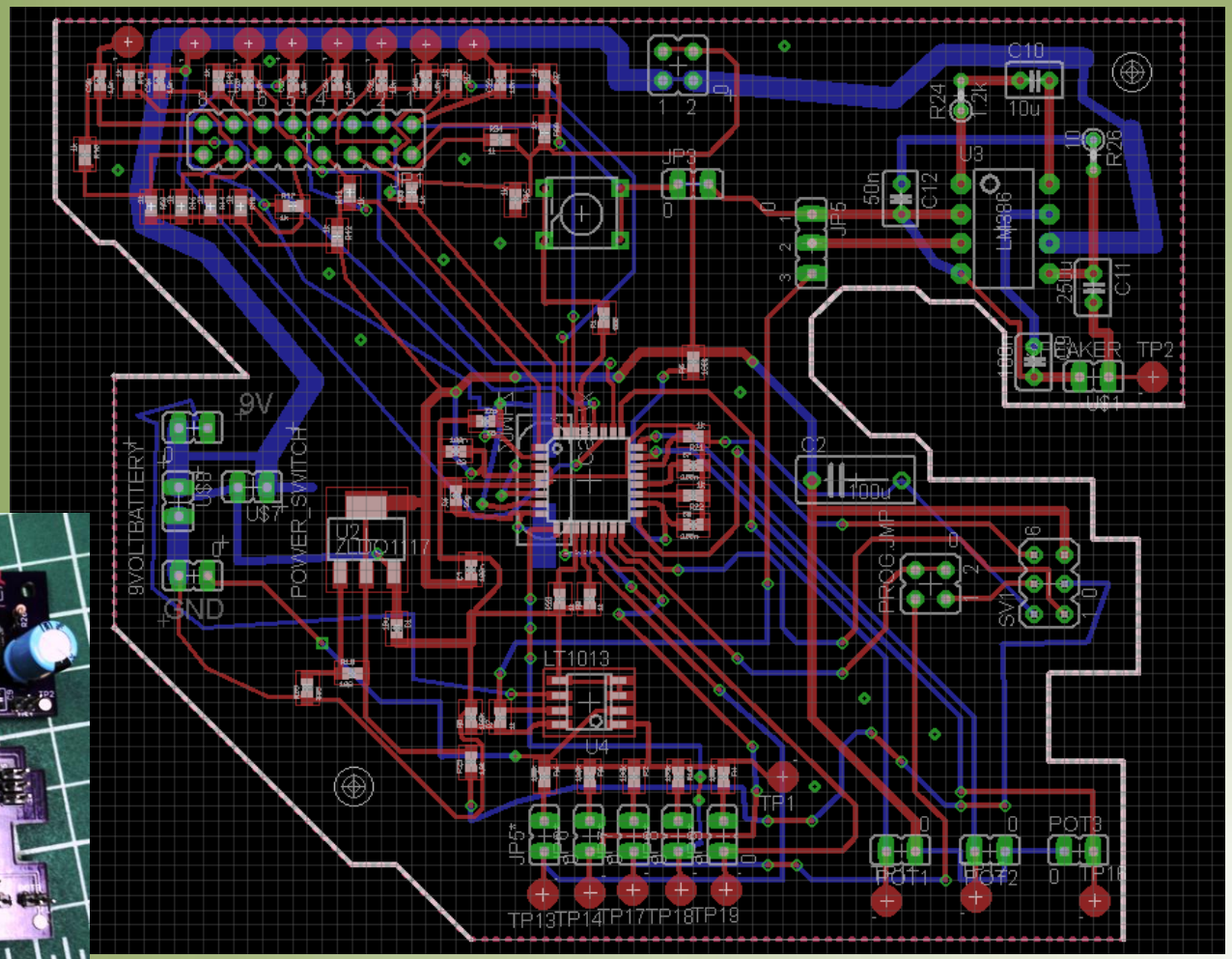

Play tones
Shift registers
Apply effects
Adjust volume
Finger Buttons
User
Volume Control
Vambrace Buttons
Speaker
Thumb Stick

Schematic

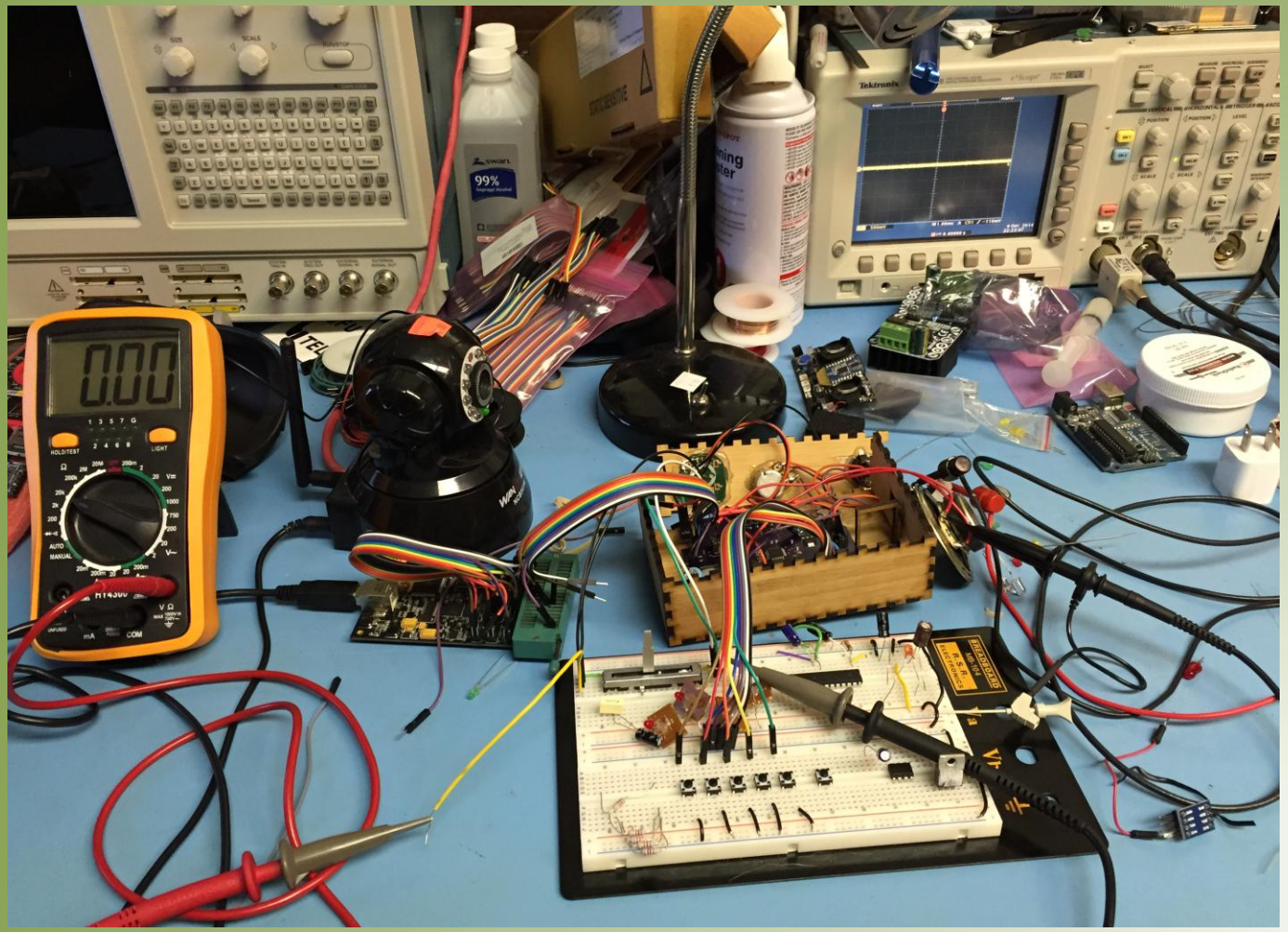

Power Supply
Jumpers to allow for alternate tone generation scheme
Summing and Amplification Stage
Microcontroller
ATMEGA328P
Analog Inputs
Programming Header
Digital Inputs
*Add jumper for default operation
T01
Glove Synthesizer
Version 5.1
11/9/2014
Team Members
A. Alavi
J. Peirce
N. Bryant
N. Sayre

PCB
Layout




C10
10u
R24
1.2k
R26
1.0
U3
LM386
C12
50n
C11
250u
JP3
JP5
SPEAKER
TP2
9V
9VOLTBATTERY
POWER_SWITCH
U$7
U$8
GND
U2
ZDU1117
C2
100u
PROG_JMP
5V
LT1013
U4
JP5
TP1
POT3
POT1
POT2
TP13
TP14
TP17
TP18
TP19

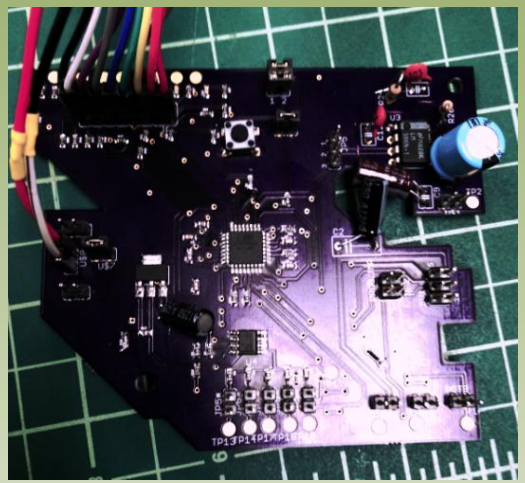
Programming



Testing


DURACELL
PLUS
9V


RESET




Domino's
Pizza
Made
Fresh,
Arrives
Fresh

Contributions

Ali	Nathan	Nick	Steve
Research	Research	Research	Research
Proposal	Proposal	Proposal	Proposal
Design Requirements	Design Requirements	Design Requirements	Test Programs
Prototype Board Assembly	Schematic	Schematic	Write Program
Project Schedule Draft+Revise	PCB Layout	PCB Layout	Revise Program
System Diagrams	Project Schedule Review	Prototype Board Design and Assembly	Finalize Program
Housing	System Diagrams	System Diagrams	Testing
Prototype Assembly	Test Plan	Housing	
Testing	Housing	PCB assembly	
Presentation	PCB assembly	Prototype Assembly	
	Prototype Assembly	Testing	
	Testing		

Lessons Learned

- RULE OF 10!
-The ugly truth of Murphy's Law.
-Eagle
-Board layouts
-Research research research!
-Reading data sheets closely and repeatedly is key
-Teamwork can be rough…
-Stay ahead of schedule!

Intellectual Property

Questions?