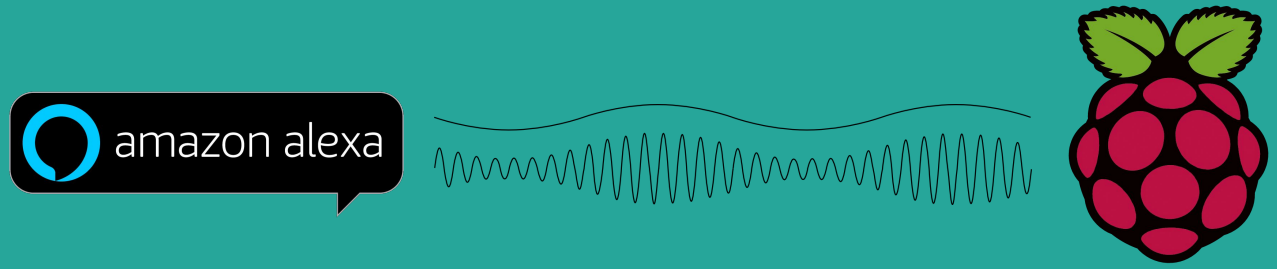
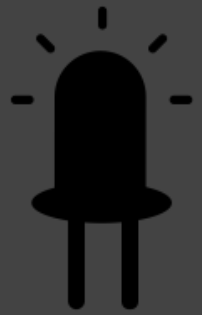


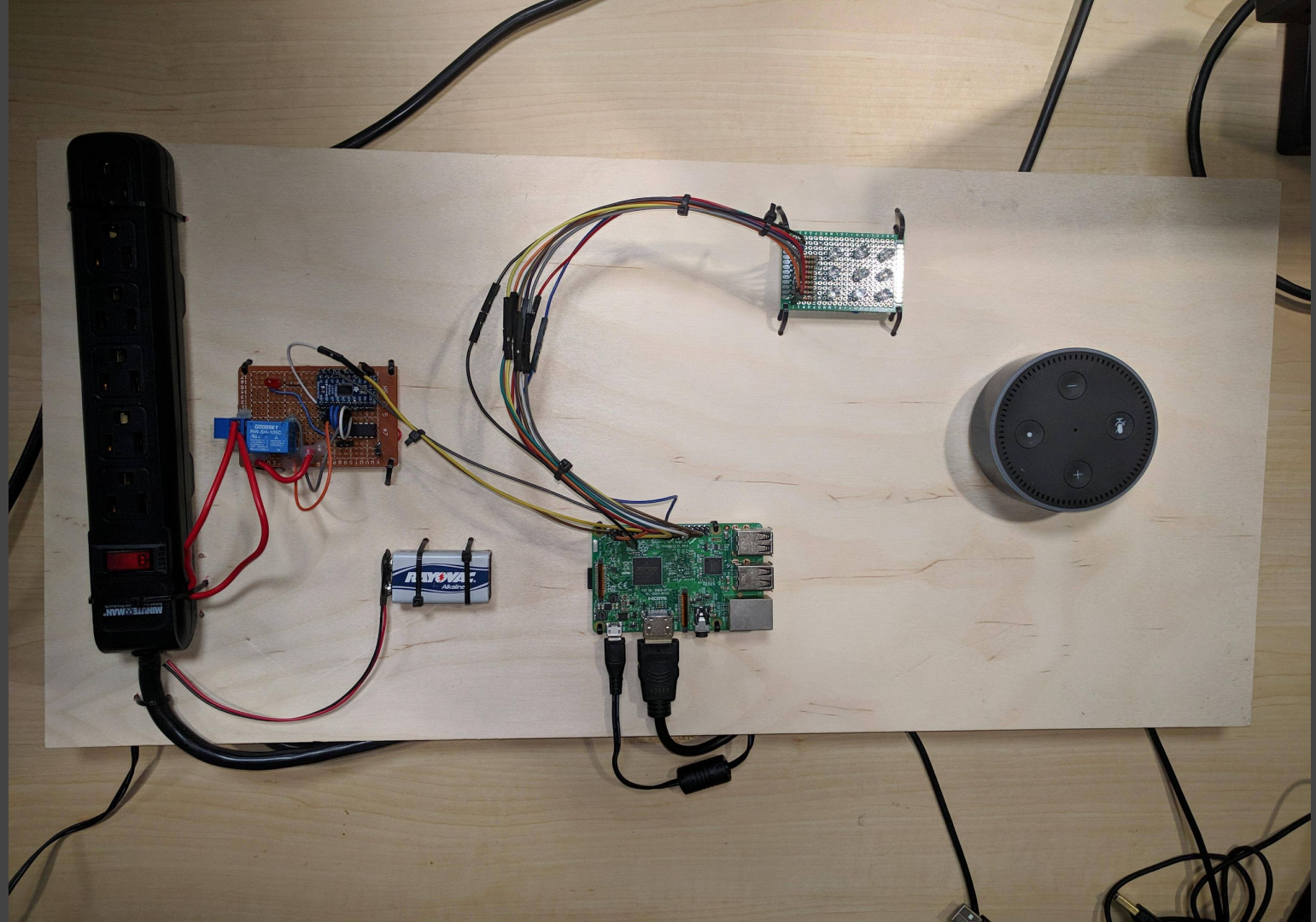
Pi Whisperers

Mike Ranis | Kenil Vora | Victor Wu | Samuel Chora

Project Description

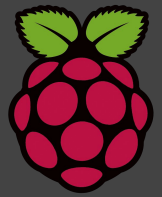
Custom Speech Controlled System that can turn devices on or off as well as control various modes on those devices




RAYOVAC
Alkaline
MINUTEMAN

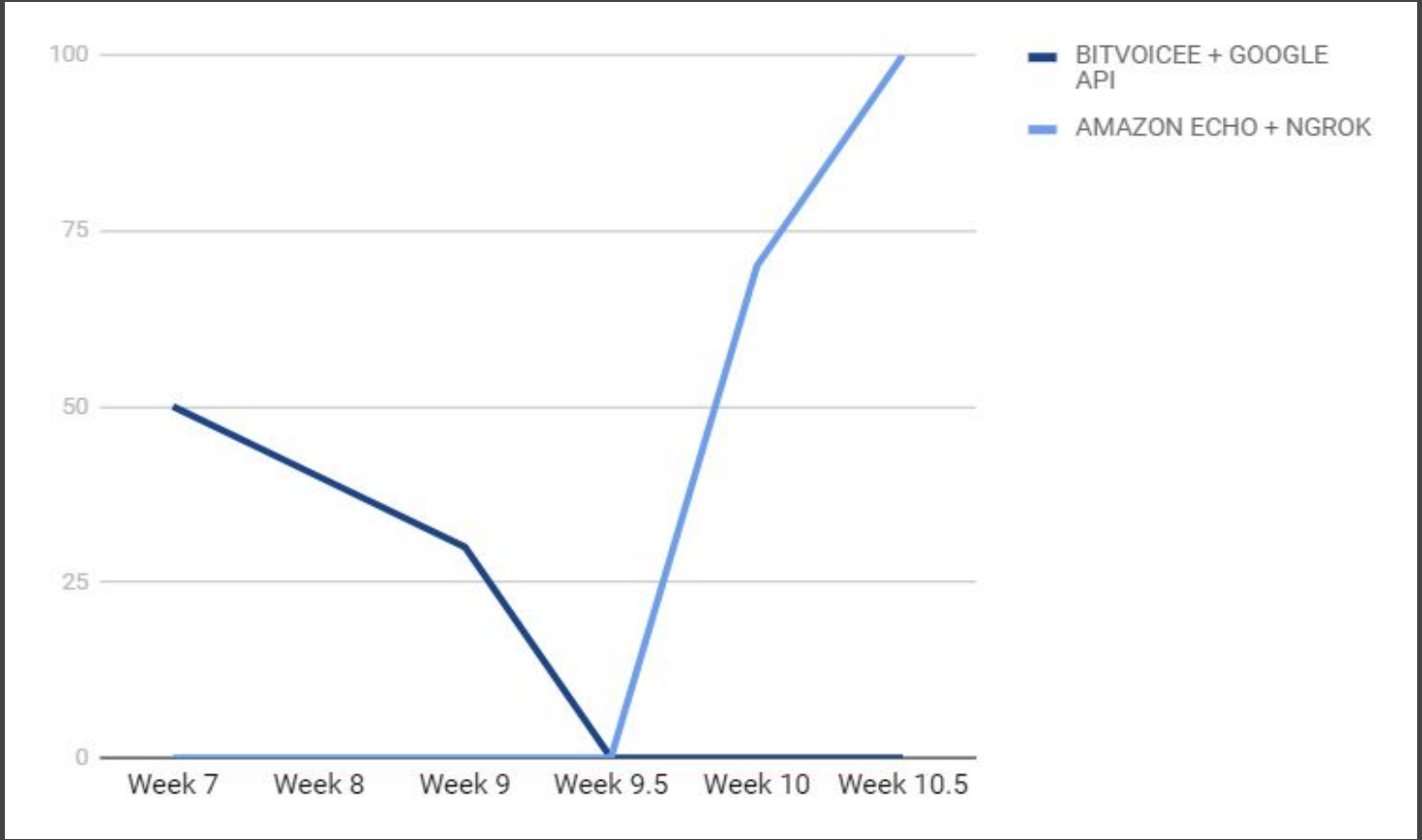
Learning Objectives

- Programming w/ Raspberry Pi in C, Python, and Java
- Configuring Amazon Alexa on Raspberry Pi
- Local Host Tunneling for Transmission Protocol (NGROK)
- Setting up Alexa Voice Control with Raspberry Pi



GitHub
ngrok

Timeline


100
75
50
25
0
Week 7
Week 8
Week 9
Week 9.5
Week 10
Week 10.5
BITVOICEE + GOOGLE API
AMAZON ECHO + NGROK

Timeline & Challenges

Week 6: Brainstorm ideas and Project Outline

Week 7: Put together Hardware and Start Documentation

Week 8: Dependency Failures due to outdated Libraries

Week 9: Pivot to Amazon Libraries & Ngrok Client

Week 10: Final Testing, Documentation and Mock Presentations

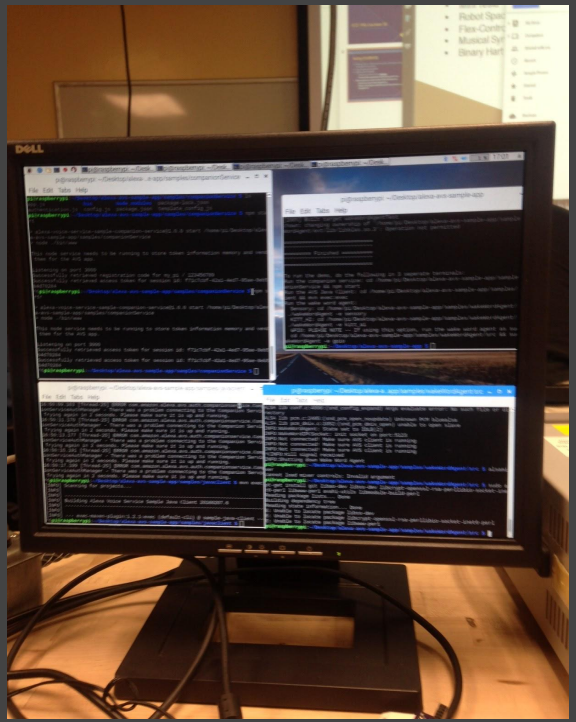
Bill of Materials

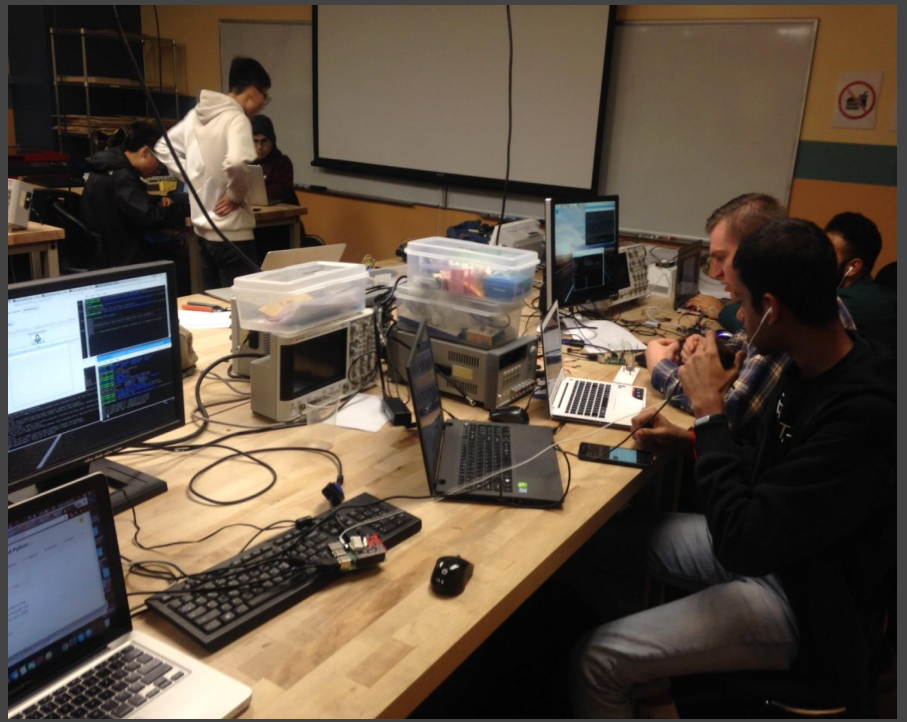
MATERIAL	AMOUNT	COST	TOTAL
Raspberry Pi 3	1	$34.88	$34.88
LED’s	9	$0.35	$3.15
1.5k Ohm Resistors	9	$0.71	$6.39
16 GB SD Cards	2	$11.84	$23.68
Amazon Libraries	1	N/A	N/A
Relay	1	$5.00	$5.00
Logic Level Shifter	1	$8.00	$8.00

GRAND TOTAL COST = $ 81.10

Build Steps

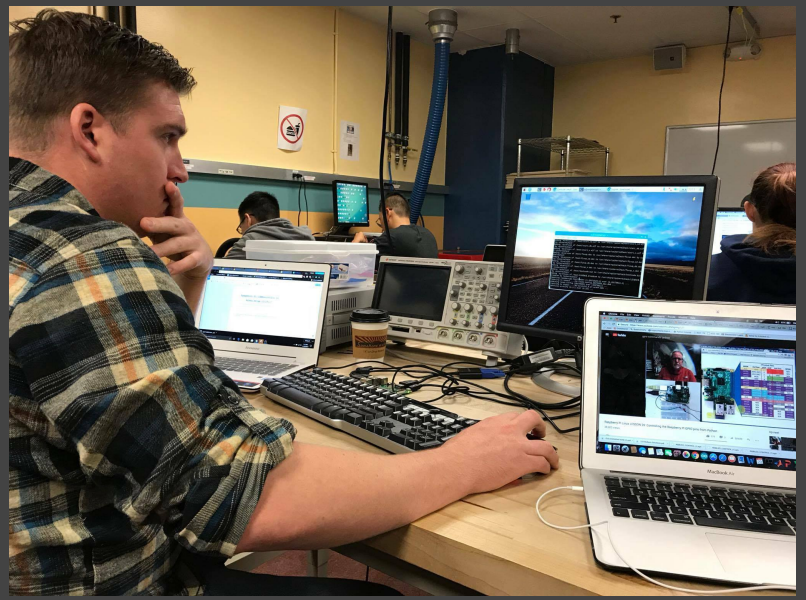
1. Integrate Alexa on Raspberry Pi & Various Extensions





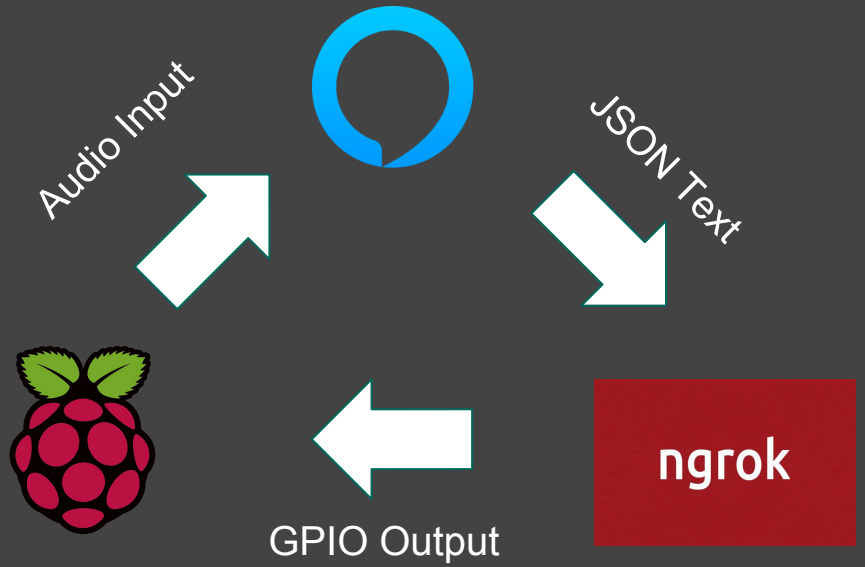
Build Steps

2. Setup hardware connections to identify https ngrok client



Build Steps

3. Setup executable Alexa commands using Amazon protocols



Grid Design

Verbal Grid

1A	1B	1C
2A	2B	2C
3A	3B	3C

GPIO Grid

1	2	3
4	5	6
7	8	9

Grid Modes

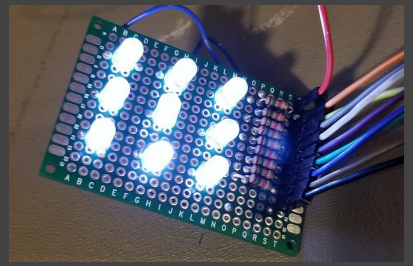
Grid (1,2,3,4,5,6,7,8,9)

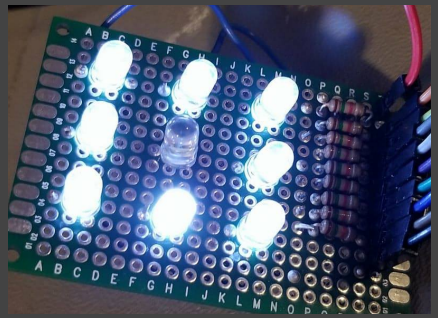
Square (1,2,3,4,6,7,8,9)

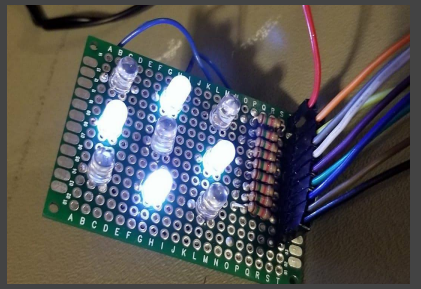
Diamond (2,4,6,8)

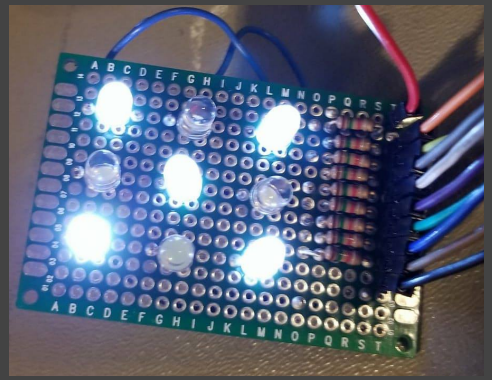
X (1,3,5,7,9)

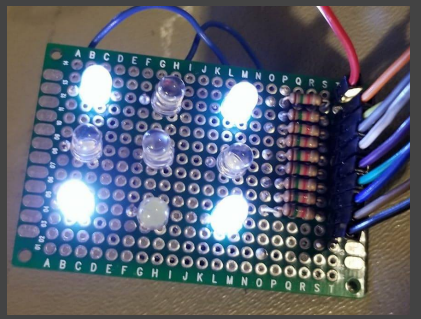
Corners (1,3,7,9)

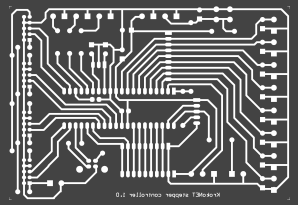




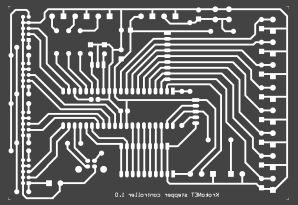


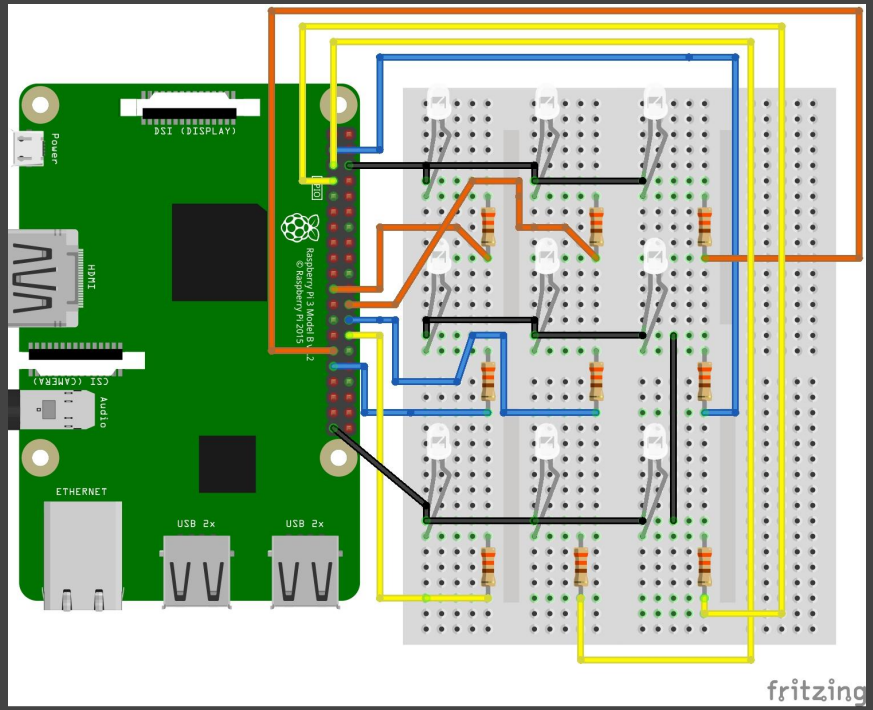


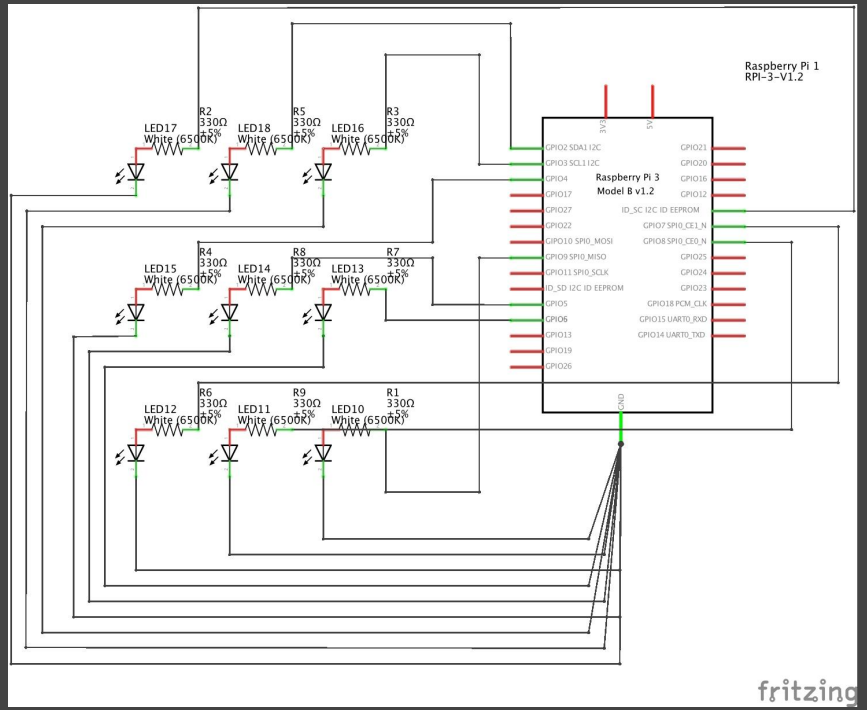




Schematics




DSI (DISPLAY)
Power
HDMI
CSI (CAMERA)
Audio
ETHERNET
USB 2x
USB 2x
Raspberry Pi 3 Model B v1.2
© Raspberry Pi 2015
fritzing


Raspberry Pi 1
RPI-3-V1.2
Raspberry Pi 3
Model B v1.2
LED17
White (6500K)
LED18
White (6500K)
LED16
White (6500K)
LED15
White (6500K)
LED14
White (6500K)
LED13
White (6500K)
LED12
White (6500K)
LED11
White (6500K)
LED10
White (6500K)
R2
330Ω
±5%
R5
330Ω
±5%
R3
330Ω
±5%
R4
330Ω
±5%
R8
330Ω
±5%
R7
330Ω
±5%
R6
330Ω
±5%
R9
330Ω
±5%
R1
330Ω
±5%
fritzing

Responsibilities

KENIL

- Voice Recognition Software
- Testing and Documentation

MIKE

- Voice Recognition Software
- GPIO to LED Grid

VICTOR

- Voice Recognition Software
- Camera Man

SAMUEL

- GPIO to LED Grid

Resources

- GPIO Pin Input/Output
  - https://pinout.xyz/
- Controlling Pi GPIO using Alexa:
  - https://www.instructables.com
- Adding & Testing custom Alexa skills:
  - https://developer.amazon.com/docs/custom-skills
- Configuring Alexa on a Raspberry Pi
  - https://lifehacker.com/how-to-build-your-own-amazon-echo-with-a-raspberry-pi-1787726931

ANY QUESTIONS ?