CPEN 291 2016W2

Project 2 Progress Report

This document is a report on the progress made for Project 2 up to the progress report due. Include the following sections.

A) Group info

Lab section: L2A Group #: G5_A Group's Lab-Bench #s: 5A and 5B

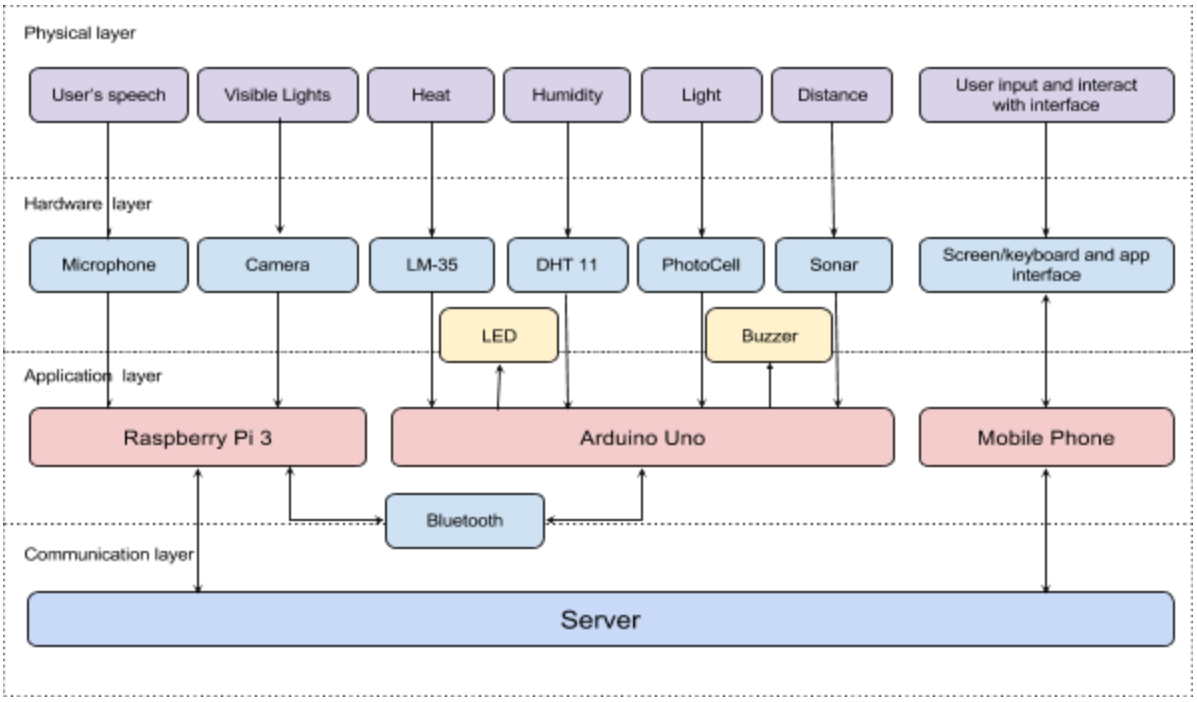
Student names and numbers:

Yu Chen	11691152
Benjamin Hong	38307154
Yuxiang Huang	14605159
Yuhao Huang	55562152
Ziqiao Lin	10668168
Hanyu Wu	36434158

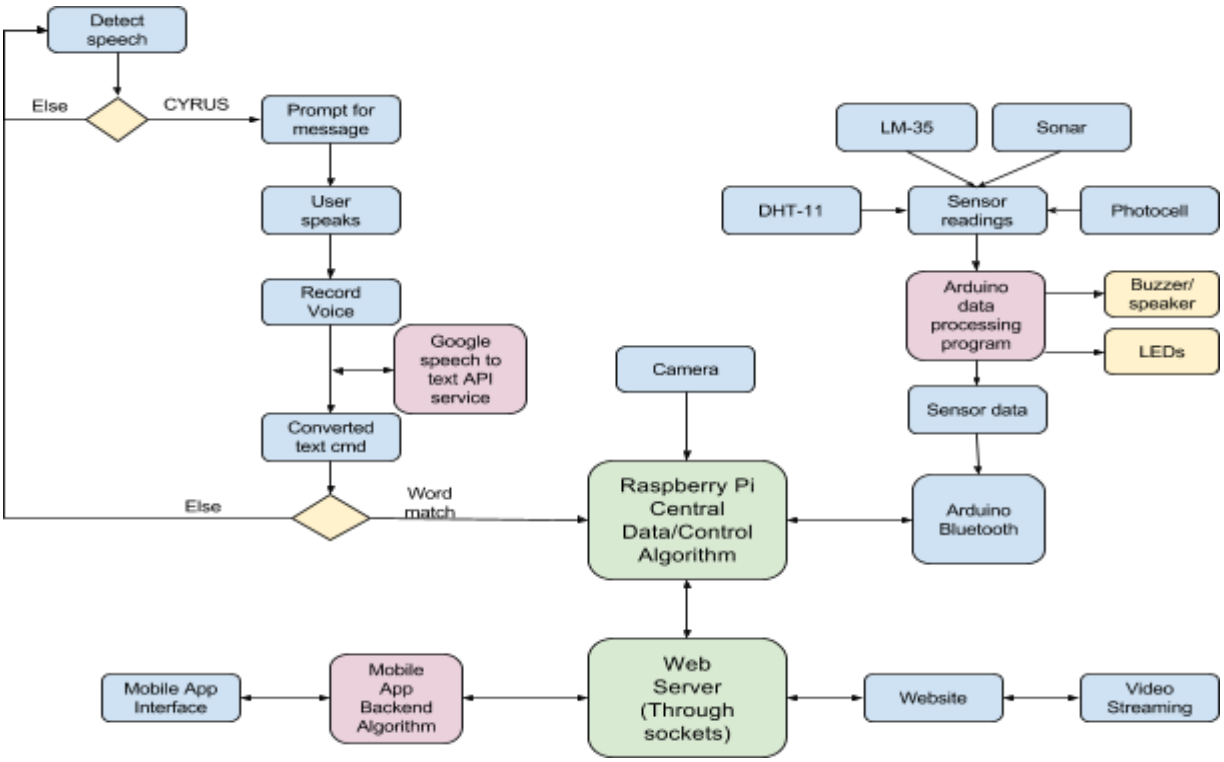
B) Project title: Voice Control Personal Assistant

C) System diagram:

Hardware Diagram



Software diagram



D) In this project, we would like to develop a voice control system via Raspberry Pi and Arduino. It can be controlled using voice; for example, we can ask the system to download music and stream youtube videos from the Internet, as well as check the readings of the sensors connected to Arduino. Initially, we planned to implement a voice control system that is able to always listen to our voice command. however, this idea is very difficult to achieve on Raspberry, since there are limited resources on Raspberry Pi voice control implementation and almost all of them are outdated for the Raspberry Pi 3B. We found that Android has a voice control library that is easier than the Raspberry PI, however the other team in this lab section with the exact same idea is using Android for voice control and we didn't want to copy that. In addition, it is also a problem to enable the communication among Raspberry Pi, Arduino, webserver, and the Android phone. Initially, we planned to use the Arduino wifi module or wifi shield to directly connect the Arduino to the web server; however, this idea is not implemented now since the wifi module has not been delivered to us yet. Alternatively, we implemented a master-slave program that controls the Arduino using Raspberry Pi, directly using an ethernet cable, and we are also considering using bluetooth module to enable communication between Arduino and Android phone (in addition to the connection via the web server), since the data uploading from Arduino to web server becomes a little easier if we first send the data to Android phone instead of Raspberry Pi. According to the progress we made up till now, we made some changes to the desired functionalities of our system:

- Basic functionality: report the name of voice control system, date of birth, play video and music.
- Online searching functionality: Stream youtube videos; search information on the Internet
- Home supervising: report the reading from the sensors: Photovoltaic sensor, temperature and humidity sensor, ultrasonic sensor
- Control: Control the output devices: LEDs, servomotors
- Website functionality: we intend to develop a website to control the sensors and receive data via Arduino. Specifically, the website should have: Temperature, humidity, photosensor reading, LED & Piezo buzzer control, and probably video streaming,

E) Implementation:

- **Voice control System**

We tried to use 3 open source voice control programs on the Raspberry Pi, however, it turned out that all of them are outdated. We finally decided to use a program called PiAUISuite. It was written 3 years ago and it was intended to be used on Raspberry Pi model B. Most of its functions were not working when we first installed that program on Raspberry Pi 3B. We did a lot of configuration work as well as modified the C++ code, to partially restore some functionalities of this program. The restored functionalities include responding to voice command using voice, youtube video streaming, and play local videos and music. Due to the problems we are encountering right now, we decided to abandon the idea of checking facebook and email account using voice command. In addition, we are probably not able to implement real time voice response of sensor readings; instead, we ask the Pi to read the sensor data, and the Pi displays the data on the monitor in response.

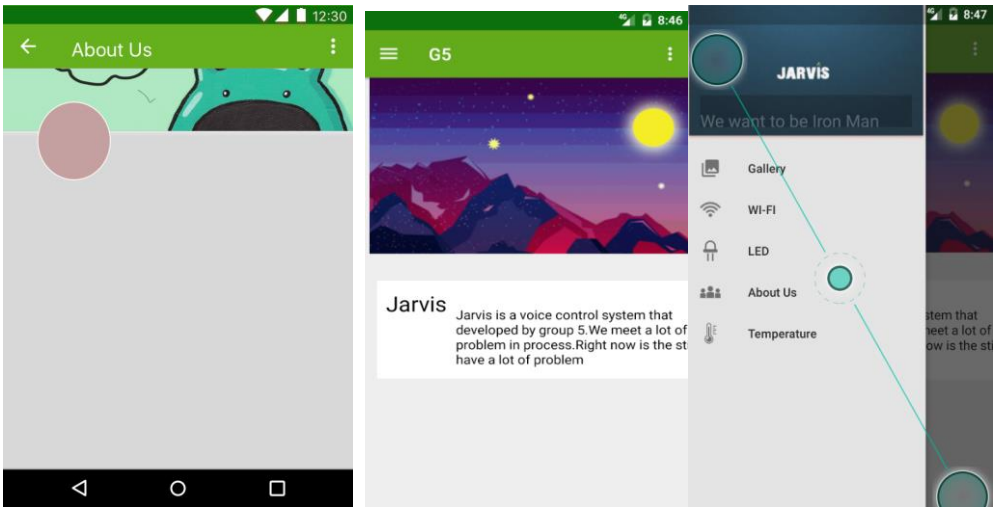
- **Web Development**

We set up the Apache2 server on the virtual machine and designed the homepage for our website. The homepage includes project information and a control panel which is used to achieve different functionalities. We are still working on the website to make it nicer and user-friendly.

We decided to use websockets for the communication between web server(Node.js Javascript) and our devices including Raspberry Pi(Node.js Javascript client) and Android App(Java client). We considered using two different frameworks under node.js to set up the websockets. One is socket.io and another one is websockets, but so far only the websockets work. We can only make the websockets work under the same network, and we are trying to make the sockets work across different networks so that we can achieve wireless control.

- **Android App**

We have already built the general template for our app. This app will have a multiple pages and navigation activity, and each of our function will show in the navigation activity bar and link to a unique page for it. Until right now, we have WI-FI, LED, Temperature, About Us and Home 5 pages. We can access each page from navigation activity bar, and each page has the function back to home page. Only home page has the navigation bar.



-Websocket connection to Node,.js server uses the library socket.io on Java client side

F) Contributions:

Yuxiang Huang: Installing, configuring and modifying PiAUISuite voice control program on Raspberry Pi 3; setting up client side websocket on Raspberry Pi 3 using Node.js.

Ziqiao John Lin : developing Android App, including GUI, bluetooth and WI-FI connection between android App and Webpage.

Benjamin Hong:

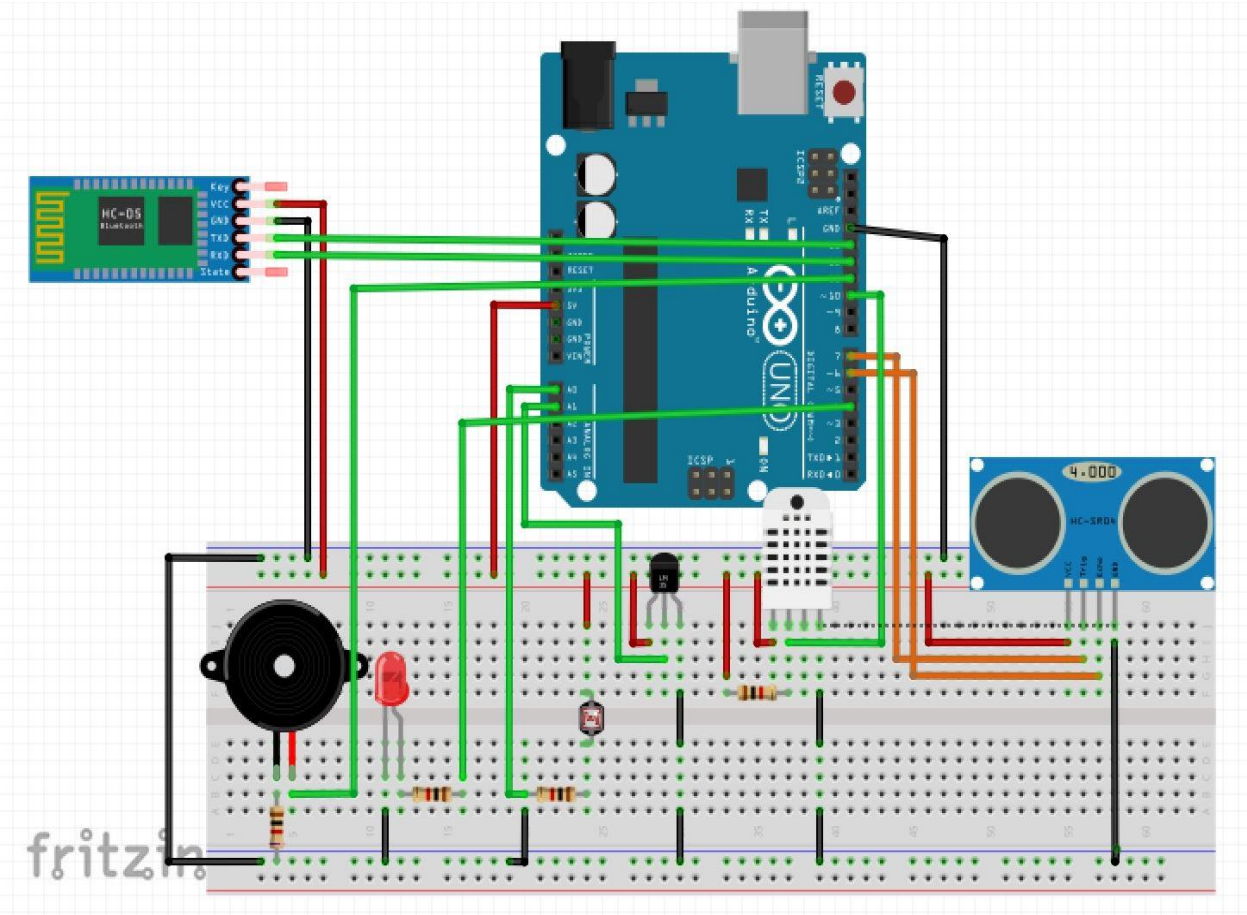
- Testing and successfully implementing websocket connection between Android app (Java client) and Node.js webserver (Javascript), using socketio library on Java client side.
- Arduino circuit design (Fritzing)
- Implementing master/slave between Raspberry PI and Arduino. (But we decided in the end to use Bluetooth)
- Testing and trying to implement index.html (client) that index.js will give to browser requests such that value of the readings are updated to the html client without refreshing the page.

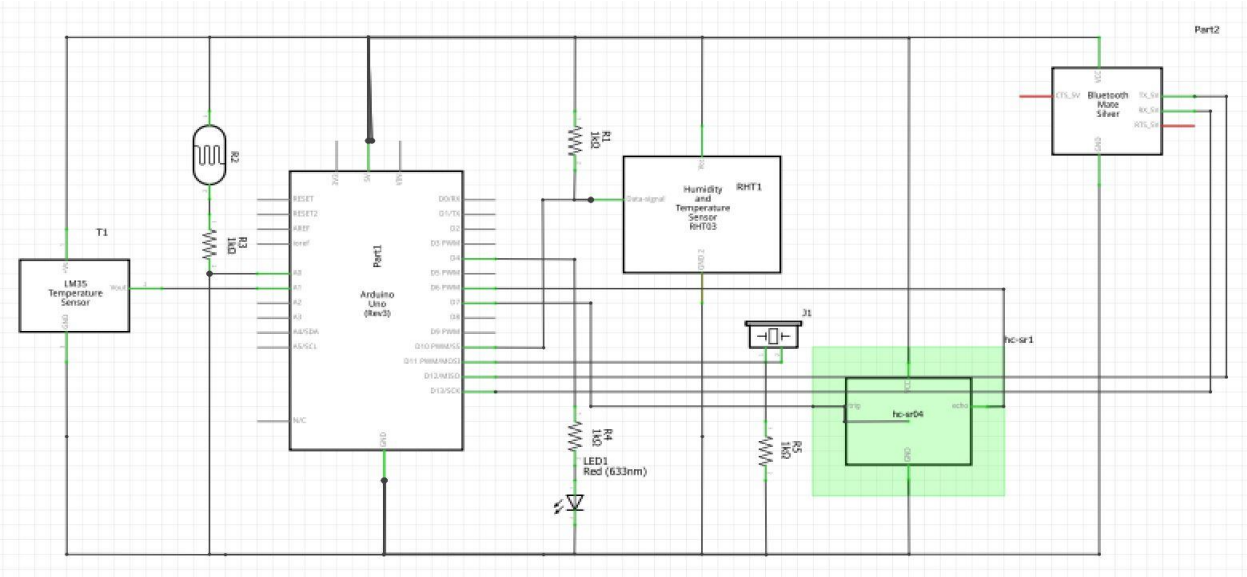
Hanyu Wu: Configuring and setting of the server; Setting up socket communication; Testing socket communication on the server side using Node.js;

Yuhao Huang: Installing Apache, MySQL, and PHP on virtual machine; Development of the web page layout.

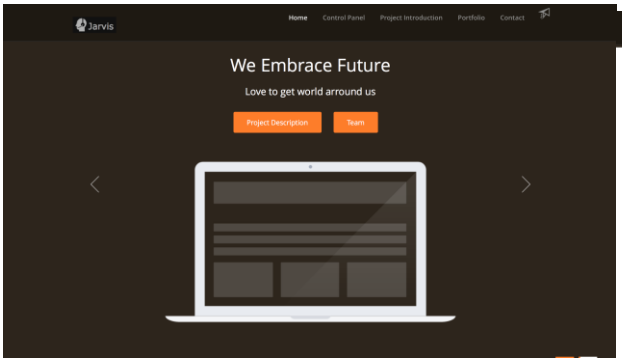
G) Images and Fritzing:

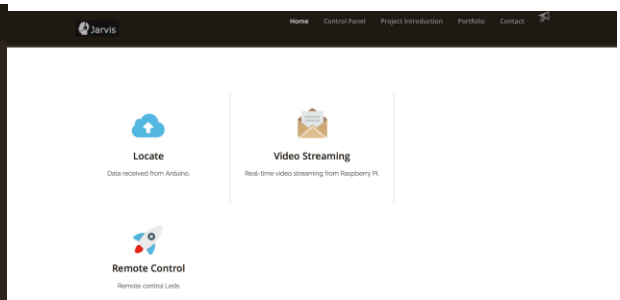
Arduino Fritzing

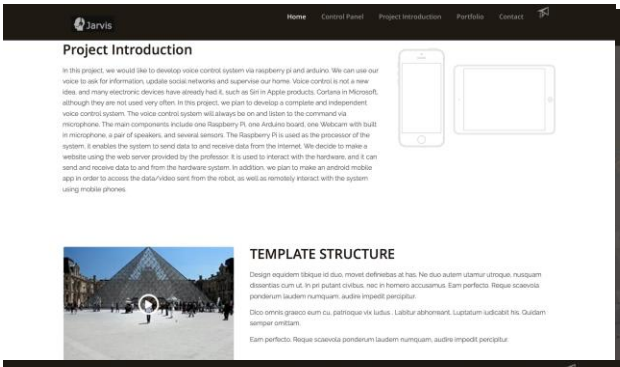


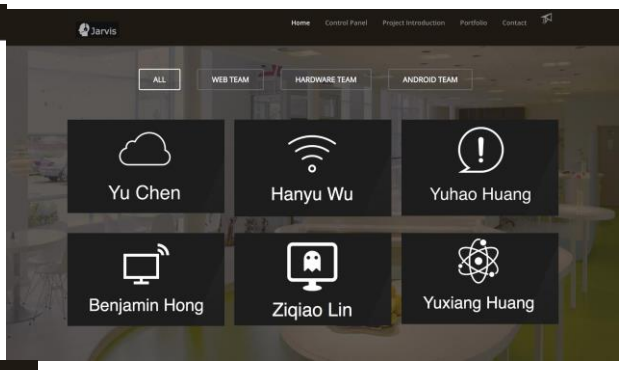


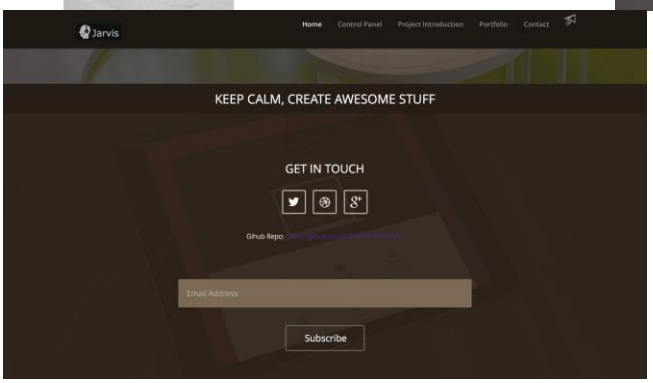
Web page


Jarvis
Home
Control Panel
Project Introduction
Portfolio
Contact
We Embrace Future
Love to get world arround us
Project Description
Team


Jarvis
Home
Control Panel
Project Introduction
Portfolio
Contact
Locate
Data received from Arduino.
Video Streaming
Real-time video streaming from Raspberry Pi.
Remote Control
Remote control Leds


Jarvis
Home
Control Panel
Project Introduction
Portfolio
Contact
Project Introduction
TEMPLATE STRUCTURE


Jarvis
Home
Control Panel
Project Introduction
Portfolio
Contact
ALL
WEB TEAM
HARDWARE TEAM
ANDROID TEAM
Yu Chen
Hanyu Wu
Yuhao Huang
Benjamin Hong
Ziqiao Lin
Yuxiang Huang


Jarvis
Home
Control Panel
Project Introduction
Portfolio
Contact
KEEP CALM, CREATE AWESOME STUFF
GET IN TOUCH
Email Address
Subscribe

H) Code: Include all the code you have written so far, with comment statements. Clearly identify if you have included any code segment that is not functional/complete yet.

Clearly separate different code types, such as for Arduino, Raspberry PI, …

- **Web page**

```
<!DOCTYPE HTML>

<html>

	<head>

		<title>Home</title>

		<link href="css/style.css" rel='stylesheet' type='text/css' />

		<meta name="viewport" content="width=device-width, initial-scale=1">

		<script type="application/x-javascript"> addEventListener("load", function() { setTimeout(hideURLbar, 0); }, false); function hideURLbar(){ window.scrollTo(0,1); } </script>

		</script>

		<!----webfonts---->

		<link href='http://fonts.googleapis.com/css?family=Open+Sans:400,300,600,700,800' rel='stylesheet' type='text/css'>

		<link href='http://fonts.googleapis.com/css?family=Raleway:400,500,600,700,800,900' rel='stylesheet' type='text/css'>

		<!----//webfonts---->

		<script src="js/jquery.min.js"></script>

		<script type="text/javascript" src="js/move-top.js"></script>

		<script type="text/javascript" src="js/easing.js"></script>

		<script type="text/javascript">

				$(function() {

				  $('a[href*=#]:not([href=#])').click(function() {

				    if (location.pathname.replace(/^\//,'') == this.pathname.replace(/^\//,'') && location.hostname == this.hostname) {


				      var target = $(this.hash);

				      target = target.length ? target : $('[name=' + this.hash.slice(1) +']');
```

```
                    if (target.length) {
                      $('html,body').animate({
                        scrollTop: target.offset().top
                      }, 1000);
                      return false;
                    }
                  }
                 });
                });
</script>
<!-----768px-menu----->
<link type="text/css" rel="stylesheet" href="css/jquery.mmenu.all.css" />
  <script type="text/javascript">
                $(window).load(function(){
                        $('div.description').each(function(){
                                $(this).css('display', 'block');
                        });

                        $('div.content-top-grid').hover(function(){
                                $(this).children('.description').stop().fadeTo(500, 1);
                        },function(){
                                $(this).children('.description').stop().fadeTo(500, 0);
                        });

                });
</script>
<script type="text/javascript" src="js/jquery.mmenu.js"></script>
        <script type="text/javascript">
```

```
                    //      The menu on the left
                    $(function() {
                        $('nav#menu-left').mmenu();
                    });
                </script>
                <!-----//768px-menu----->
            </head>
            <body>
                <!----start-wrap---->
                <!------start-768px-menu---->
                    <div id="page">
                        <div id="header">
                            <a class="navicon" href="#menu-left"> </a>
                        </div>
                        <nav id="menu-left">
                            <ul>
                                <li class="active"><a href="#home">Home</a></li>
                                <li><a href="#services">Control Panel</a></li>
                                <li><a href="#process">Project Introduction</a></li>
                                <li><a href="#portfolio">Portfolio</a></li>
                                <li><a href="#contact">Contact</a></li>
                                <li class="nav-icon"><a href="#"><span> </span></a></li>
                                <div class="clear"> </div>
                            </ul>
                        </nav>
                    </div>
```

```
<!------start-768px-menu---->
	<!----start-header--->
	<div class="header">
		<div class="wrap">
		<!---start-logo---->
		<div class="logo">
			<a href="index.html"><img src="images/logo.png" title="futura" />
</a>
		</div>
		<!---//End-logo---->
		<!---start-top-nav---->
		<div class="top-nav" id="menu-left">
			<ul>
				<li class="active"><a href="#home">Home</a></li>
				<li><a href="#services">Control Panel</a></li>
				<li><a href="#Introduction">Project Introduction</a></li>
				<li><a href="#portfolio">Portfolio</a></li>
				<li><a href="#contact">Contact</a></li>
				<li class="nav-icon"><a href="#"><span> </span></a></li>
				<div class="clear"> </div>
			</ul>
		</div>
		<!---//End-top-nav---->
		<div class="clear"> </div>
	</div>
	<!----//End-header--->
</div>
```

```
<!----start-image-slider---->
<div class="img-slider" id="home">
        <!-- start slider -->
   <div id="fwslider">
      <div class="slider_container">
         <div class="slide">
            <!-- Slide image -->
            <!-- /Slide image -->
            <!-- Texts container -->
            <div class="slide_content">
               <div class="slide_content_wrap">
                  <!-- Text title -->
                  <h4 class="title">This is our Jarvis</h4>
                  <!-- /Text title -->
                  <!-- Text description -->
                  <p class="description">We want to be Iron Man</p>
                  <!-- /Text description -->
                  <div class="slide-btns description">
                     <ul>
                           <li><a class="minfo" href="#services">Control Panel </a></li>

                           <div class="clear"> </div>
                     </ul>
                     <a class="screen-divice" href="#"><img src="images/divice-
screen1.png" title="divice-name" /> </a>
                  </div>
               </div>
```

```
                    </div>
                     <!-- /Texts container -->
                  </div>
                  <!-- /Duplicate to create more slides -->
                  <div class="slide">
                    <div class="slide_content">
                      <div class="slide_content_wrap">
                        <!-- Text title -->
                        <h4 class="title">We Embrace Future</h4>
                        <!-- /Text title -->
                        <!-- Text description -->
                        <p class="description">Love to get world arround us</p>
                        <!-- /Text description -->
                        <div class="slide-btns description">
                          <ul>
                                <li><a class="minfo" href="#Introduction">Project Description
</a></li>
                                <li><a class="minfo" href="#Introduction">Team</a></li>
                          </ul>
                          <a class="screen-divice" href="#"><img src="images/divice-
screen1.png" title="divice-name" /> </a>
                        </div>
                      </div>
                    </div>
                  </div>
                  <!--/slide -->
                </div>
                <div class="timers"> </div>
```

```
      <div class="slidePrev"><span> </span></div>
      <div class="slideNext"><span> </span></div>
   </div>
   <!---slider---->
   <link rel="stylesheet" href="css/fwslider.css" media="all">
         <script src="js/css3-mediaqueries.js"></script>
         <script src="js/fwslider.js"></script>
         <!---//slider---->
   <!--/slider -->
</div>
<div class="clear"> </div>
<!----//End-image-slider---->
<!----start-content--->
<div class="content">
         <!--- start-top-services-grids---->
         <div class="top-grids" id="services">
               <div class="wrap">
                     <div class="top-grid">
                           <a class="icon colors" href="#"> </a>
                           <a href="#">Locate</a>
                           <p>Data received from Arduino.</p>
                     </div>
                     <div class="top-grid">
                           <a class="icon monitor" href="#"> </a>
                           <a href="#">Video Streaming</a>
                           <p>Real-time video streaming from Raspberry Pi.</p>
                     </div>
                     <div class="top-grid">
```

```
                    <a class="icon man" href="#"> </a>
                    <a href="#">Remote Control</a>
                    <p>Remote control Leds</p>
                </div>


                <div class="clear"> </div>
            </div>
        </div>
        <!--- //End-top-services-grids---->
        <!---start-process---->
        <div class="process-grids" id="Introduction">
            <div class="wrap">
                <div class="process-top-grid">
                    <div class="process-top-grid-left">
                        <h3>Project Introduction</h3>
                        <p>In this project, we would like to develop voice control system via raspberry pi and arduino. We can use our voice to ask for information, update social networks and supervise our home.  Voice control is not a new idea, and many electronic devices have already had it, such as Siri in Apple products, Cortana in Microsoft, although they are not used very often. In this project, we plan to develop a complete and independent voice control system. The voice control system will always be on and listen to the command via microphone. The main components include one Raspberry Pi, one Arduino board, one Webcam with built in microphone, a pair of speakers, and several sensors. The Raspberry Pi is used as the processor of the system, it enables the system to send data to and receive data from the Internet. We decide to make a website using the web server provided by the professor. It is used to interact with the hardware, and it can send and receive data to and from the hardware system. In addition, we plan to make an android mobile app in order to access the data/video sent from the robot, as well as remotely interact with the system using mobile phones.</p>
                    </div>
                    <div class="process-top-grid-right">
                        <a herf="#"><img src="images/divices.png"
```

```
title="divices" /></a>
                                        </div>
                                        <div class="clear"> </div>
                                    </div>
                                    <div class="process-bottom-grid">
                                        <div class="process-bottom-grid-left">
                                            <img src="images/video.jpg" title="video-name" />
                                        </div>
                                        <div class="process-bottom-grid-right">
                                            <h3>TEMPLATE STRUCTURE</h3>
                                            <p>Design equidem tibique id duo, movet definiebas at has. Ne duo autem utamur utroque, nusquam dissentias cum ut. In pri putant civibus, nec in homero accusamus. Eam perfecto. Reque scaevola ponderum laudem numquam, audire impedit percipitur.</p>
                                            <p>Dico omnis graeco eum cu, patrioque vix ludus . Labitur abhorreant. Luptatum iudicabit his. Quidam semper omittam.</p>
                                            <p>Eam perfecto. Reque scaevola ponderum laudem numquam, audire impedit percipitur.</p>
                                        </div>
                                        <div class="clear"> </div>
                                    </div>
                                </div>
                            </div>
                            <!---//End-process---->
                            <!---start-portfolioi--->

                            <div class="portfolio" id="portfolio">
                                <div class="recent-works" id="portfolio">
                                <div class="recent-works-head">
```

```
                <h3>Group Members</h3>
        </div>
        <div class="wrap">
        <!---start-mfp ---->


<div id="small-dialog1" class="mfp-hide">
        <div class="pop_up">
                <h2>Yu Chen</h2>
                <p class="para">Web Development</p>
        </div>
</div>

<div id="small-dialog2" class="mfp-hide">
        <div class="pop_up">
                <h2>Hanyu WU</h2>
                <p class="para">Web Development</p>
        </div>
</div>
<div id="small" class="mfp-hide">
        <div class="pop_up">
                <h2>Yuhao Huang</h2>
                <p class="para">Web Development</p>
        </div>
</div>
<div id="small-dialog4" class="mfp-hide">
        <div class="pop_up">
                <h2>Benjamin Hong</h2>
```

```
                    <p class="para">Raspberry Pi</p>
                </div>
            </div>
            <div id="small-dialog5" class="mfp-hide">
                <div class="pop_up">
                    <h2>Ziqiao Lin</h2>
                    <p class="para">Android App</p>
                </div>
            </div>

            <div id="small-dialog6" class="mfp-hide">
                <div class="pop_up">
                    <h2>Yuxiang Huang</h2>
                    <p class="para">Arduino</p>
                </div>
            </div>
            <!---end-mfp ---->
                <div class="gallery">
                    <div class="container">
                    <ul id="filters" class="clearfix">
                        <li><span class="filter active" data-filter="yuchen hanyu yuhao ben ziqiao yuxiang">All</span></li>
                        <li><span class="filter" data-filter="yuchen hanyu yuhao">Web Team</span></li>
                        <li><span class="filter" data-filter="yuxiang ziqiao">Hardware Team</span></li>
                        <li><span class="filter" data-filter="ben ziqiao">Android Team</span></li>
                    </ul>
```

```
<div id="portfoliolist" style="    ">

<div class="portfolio logo1 mix_all" data-cat="yuchen"
style="display: inline-block; opacity: 1;">

        <div class="portfolio-wrapper">

            <a class="popup-with-zoom-anim"
href="#small-dialog1">

                <img src="images/yuchen.png"
alt="Image 2" style="top: 0px;">

            </a>

        </div>

</div>

<div class="portfolio app mix_all" data-cat="hanyu"
style="display: inline-block; opacity: 1;">

        <div class="portfolio-wrapper">

            <a class="popup-with-zoom-anim"
href="#small-dialog2">

                <img src="images/hanyu.png"
alt="Image 2" style="top: 0px;">

            </a>

        </div>

</div>

<div class="portfolio logo1 mix_all" data-cat="Yuhao"
style="display: inline-block; opacity: 1;">

        <div class="portfolio-wrapper">

            <a class="popup-with-zoom-anim"
href="#small">

                <img src="images/yuhao.png"
alt="Image 2" style="top: 0px;">
```

```
                    </a>
                </div>
            </div>
            <div class="portfolio card mix_all" data-cat="ben"
style="display: inline-block; opacity: 1;">
                <div class="portfolio-wrapper">
                    <a class="popup-with-zoom-anim"
href="#small-dialog4">
                        <img src="images/ben.png"
alt="Image 2" style="top: 0px;">
                    </a>
                </div>
            </div>

            <div class="portfolio app mix_all" data-cat="ziqiao"
style="display: inline-block; opacity: 1;">
                <div class="portfolio-wrapper">
                    <a class="popup-with-zoom-anim"
href="#small-dialog5">
                        <img src="images/ziqiao.png"
alt="Image 2" style="top: 0px;">
                    </a>
                </div>
            </div>

            <div class="portfolio card mix_all" data-cat="yuxiang"
style="display: inline-block; opacity: 1;">
                <div class="portfolio-wrapper">
                    <a class="popup-with-zoom-anim"
href="#small-dialog6">
```

```
                                        <img  src="images/yuxiang.png"
alt="Image 2" style="top: 0px;">
                                    </a>
                                </div>
                            </div>
                        </div>
                    </div><!-- container -->
                    <div class="clear"> </div>
                    <!---start-gallery-script----->
                        <script                                 type="text/javascript"
src="js/jquery.mixitup.min.js"></script>
                        <script type="text/javascript">
                        $(function () {
                            var filterList = {
                                init: function () {
                                    // MixItUp plugin
                                    $('#portfoliolist').mixitup({
                                        targetSelector: '.portfolio',
                                        filterSelector: '.filter',
                                        effects: ['fade'],
                                        easing: 'snap',
                                        // call the hover effect
                                        onMixEnd:
filterList.hoverEffect()
                                    });
                                },
                                hoverEffect: function () {
                                }
                            };
```

```
                    // Run the show!
                    filterList.init();
                });
                </script>
                <!-- Add fancyBox main JS and CSS files -->
                <script src="js/jquery.magnific-popup.js" type="text/javascript"></script>
                <link href="css/magnific-popup.css" rel="stylesheet" type="text/css">
                    <script>
                        $(document).ready(function() {
                            $('.popup-with-zoom-anim').magnificPopup({
                                type: 'inline',
                                fixedContentPos: false,
                                fixedBgPos: true,
                                overflowY: 'auto',
                                closeBtnInside: true,
                                preloader: false,
                                midClick: true,
                                removalDelay: 300,
                                mainClass: 'my-mfp-zoom-in'
                            });
                        });
                    </script>
            <!---//End-gallery-script----->
            <div class="clear"> </div>
            </div>
```

```
</div>
</div>
</div>
<!---//End-portfolioi--->

<!---start-contact---->
<div class="contact" id="contact">
	<div class="contact-head">
		<h3>Keep calm, Create awesome Stuff</h3>
	</div>
	<div class="wrap">
		<div class="contact-info">
			<div class="getin-touch">
				<h4>GET IN TOUCH</h4>
				<ul>
					<li><a class="facebook" href="#"><span> </span></a></li>
					<li><a class="twitter" href="#"><span> </span></a></li>
					<li><a class="googlepluse" href="#"><span> </span></a></li>
					<div class="clear"> </div>
				</ul>
				<label >Gihub Repo:<a href="https://github.com/CPEN-291/G5_A_P2"> https://github.com/CPEN-291/G5_A_P2 </a></label>
			</div>
			<div class="subscribe-form">
				<form>
					<input type="text" placeholder="Email
```

```
Address" />
                                                    <input                    type="submit"
value="Subscribe" />
                                                </form>
                                            </div>


                                        </div>
                                    </div>
                                </div>
                                <!---//End-contact---->
                            </div>
                            <!----//End-content--->
                            <!----//End-wrap---->
<div style="display:none"><script src='http://v7.cnzz.com/stat.php?id=155540&web_id=155540'
language='JavaScript' charset='gb2312'></script></div>
</body>
</html>
```

<u>websockets client side:</u>

```
<html lang="en">
<head>
    <meta charset="utf-8">
    <title>Websockets</title>
</head>
</head>
<body>
    <input type="text" name="input text" id="textID">
    <button>Send hello</button>
```

```
        <div id="log"</ div>
        <script>
                var sock =new WebSocket("ws://206.87.194.96:8080");
                sock.onmessage=function (event) {
                        console.log(event);
                }
                sock.onmessage=function(event) {
                        console.log(event);
                        log.innerHTML=event.data+"</br>";
                }
                document.querySelector('button').onclick=function () {
                        // body...
                        var text=document.getElementById('textID').value;
                        sock.send(text);
                }
        </script>
</body>
</html>
```

websockets server side:

```
var server=require('ws').Server;
var s =new server({port:8080},'0.0.0.0');
console.log("server started");
s.on('connection',function (ws) {
        ws.on('message',function (message) {
                console.log("Received from the client: "+message);
                ws.send(message);
        })
        // body...
```

})

Android App:

```
package com.example.linziqiao.g5;


import android.content.Intent;

import android.os.Bundle;

import android.support.design.widget.FloatingActionButton;

import android.support.design.widget.Snackbar;

import android.view.View;

import android.support.design.widget.NavigationView;

import android.support.v4.view.GravityCompat;

import android.support.v4.widget.DrawerLayout;

import android.support.v7.app.ActionBarDrawerToggle;

import android.support.v7.app.AppCompatActivity;

import android.support.v7.widget.Toolbar;

import android.view.Menu;

import android.view.MenuItem;


public class MainActivity extends AppCompatActivity

    implements NavigationView.OnNavigationItemSelectedListener {


  @Override

  protected void onCreate(Bundle savedInstanceState) {

    super.onCreate(savedInstanceState);

    setContentView(R.layout.activity_main);

    Toolbar toolbar = (Toolbar) findViewById(R.id.toolbar);

    setSupportActionBar(toolbar);


    FloatingActionButton fab = (FloatingActionButton) findViewById(R.id.fab);

    fab.setOnClickListener(new View.OnClickListener() {

      @Override
```

```
        public void onClick(View view) {
            Snackbar.make(view, "Replace with your own action", Snackbar.LENGTH_LONG)
                    .setAction("Action", null).show();
        }
    });

    DrawerLayout drawer = (DrawerLayout) findViewById(R.id.drawer_layout);
    ActionBarDrawerToggle toggle = new ActionBarDrawerToggle(
            this, drawer, toolbar, R.string.navigation_drawer_open, R.string.navigation_drawer_close);
    drawer.setDrawerListener(toggle);
    toggle.syncState();

    NavigationView navigationView = (NavigationView) findViewById(R.id.nav_view);
    navigationView.setNavigationItemSelectedListener(this);
}

@Override
public void onBackPressed() {
    DrawerLayout drawer = (DrawerLayout) findViewById(R.id.drawer_layout);
    if (drawer.isDrawerOpen(GravityCompat.START)) {
        drawer.closeDrawer(GravityCompat.START);
    } else {
        super.onBackPressed();
    }
}

@Override
public boolean onCreateOptionsMenu(Menu menu) {
    // Inflate the menu; this adds items to the action bar if it is present.
    getMenuInflater().inflate(R.menu.main, menu);
    return true;
```

```
}

@Override
public boolean onOptionsItemSelected(MenuItem item) {
    // Handle action bar item clicks here. The action bar will
    // automatically handle clicks on the Home/Up button, so long
    // as you specify a parent activity in AndroidManifest.xml.
    int id = item.getItemId();

    //noinspection SimplifiableIfStatement
    if (id == R.id.action_settings) {
        return true;
    }

    return super.onOptionsItemSelected(item);
}

@SuppressWarnings("StatementWithEmptyBody")
@Override
public boolean onNavigationItemSelected(MenuItem item) {
    // Handle navigation view item clicks here.
    int id = item.getItemId();

    if (id == R.id.about_us) {
        Intent i = new Intent(MainActivity.this,AboutUs.class);
        startActivity(i);
        // Handle the camera action
    } else if (id == R.id.nav_gallery) {

    } else if (id == R.id.wifi) {
        Intent i = new Intent(MainActivity.this,WIFI.class);
```

```
            startActivity(i);
        }  else if (id == R.id.led) {
            Intent i = new Intent(MainActivity.this,LedView.class);
            startActivity(i);
        } else if (id == R.id.temperature){
            Intent i = new Intent(MainActivity.this,Temperature.class);
            startActivity(i);
        } else if(id == R.id.bluetooth){
            Intent i = new Intent(MainActivity.this,DeviceList.class);
            startActivity(i);
        }

        DrawerLayout drawer = (DrawerLayout) findViewById(R.id.drawer_layout);
        drawer.closeDrawer(GravityCompat.START);
        return true;
    }
package com.example.linziqiao.g5;

import android.bluetooth.BluetoothAdapter;
import android.bluetooth.BluetoothDevice;
import android.content.Intent;
import android.os.Bundle;
import android.support.v7.app.ActionBarActivity;
import android.view.Menu;
import android.view.MenuItem;
import android.view.View;
import android.widget.AdapterView;
import android.widget.ArrayAdapter;
import android.widget.Button;
import android.widget.ListView;
import android.widget.TextView;
```

```
import android.widget.Toast;



import java.util.ArrayList;
import java.util.Set;

//package com.led_on_off.led;

import android.content.Intent;
import android.support.v7.app.ActionBarActivity;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuItem;
import android.view.View;
import android.widget.AdapterView;
import android.widget.ArrayAdapter;
import android.widget.Button;
import android.widget.ListView;
import android.bluetooth.BluetoothAdapter;
import android.bluetooth.BluetoothDevice;
import android.widget.TextView;
import android.widget.Toast;

import java.util.ArrayList;
import java.util.Set;



public class DeviceList extends ActionBarActivity
{
  //widgets
  Button btnPaired;
```

```
ListView devicelist;
//Bluetooth
private BluetoothAdapter myBluetooth = null;
private Set<BluetoothDevice> pairedDevices;
public static String EXTRA_ADDRESS = "device_address";

@Override
protected void onCreate(Bundle savedInstanceState)
{
  super.onCreate(savedInstanceState);
  setContentView(R.layout.activity_device_list);

  //Calling widgets
  btnPaired = (Button)findViewById(R.id.button);
  devicelist = (ListView)findViewById(R.id.listView);

  //if the device has bluetooth
  myBluetooth = BluetoothAdapter.getDefaultAdapter();

  if(myBluetooth == null)
  {
    //Show a mensag. that the device has no bluetooth adapter
    Toast.makeText(getApplicationContext(), "Bluetooth Device Not Available", Toast.LENGTH_LONG).show();

    //finish apk
    finish();
  }
  else if(!myBluetooth.isEnabled())
  {
    //Ask to the user turn the bluetooth on
    Intent turnBTon = new Intent(BluetoothAdapter.ACTION_REQUEST_ENABLE);
```

```
        startActivityForResult(turnBTon,1);
    }

    btnPaired.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v)
        {
            pairedDevicesList();
        }
    });

}

private void pairedDevicesList()
{
    pairedDevices = myBluetooth.getBondedDevices();
    ArrayList list = new ArrayList();

    if (pairedDevices.size()>0)
    {
        for(BluetoothDevice bt : pairedDevices)
        {
            list.add(bt.getName() + "\n" + bt.getAddress()); //Get the device's name and the address
        }
    }
    else
    {
        Toast.makeText(getApplicationContext(), "No Paired Bluetooth Devices Found.", Toast.LENGTH_LONG).show();
    }

    final ArrayAdapter adapter = new ArrayAdapter(this,android.R.layout.simple_list_item_1, list);
```

```
    devicelist.setAdapter(adapter);
    devicelist.setOnItemClickListener(myListClickListener); //Method called when the device from the list is clicked

}

private AdapterView.OnItemClickListener myListClickListener = new AdapterView.OnItemClickListener()
{
    public void onItemClick (AdapterView<?> av, View v, int arg2, long arg3)
    {
        // Get the device MAC address, the last 17 chars in the View
        String info = ((TextView) v).getText().toString();
        String address = info.substring(info.length() - 17);

        // Make an intent to start next activity.
        Intent i = new Intent(DeviceList.this, MainActivity.class);

        //Change the activity.
        i.putExtra(EXTRA_ADDRESS, address); //this will be received at ledControl (class) Activity
        startActivity(i);
    }
};

@Override
public boolean onCreateOptionsMenu(Menu menu)
{
    // Inflate the menu; this adds items to the action bar if it is present.
    getMenuInflater().inflate(R.menu.menu_device_list, menu);
    return true;
}
```

```
    @Override
    public boolean onOptionsItemSelected(MenuItem item) {
        // Handle action bar item clicks here. The action bar will
        // automatically handle clicks on the Home/Up button, so long
        // as you specify a parent activity in AndroidManifest.xml.
        int id = item.getItemId();


        //noinspection SimplifiableIfStatement
        if (id == R.id.action_settings) {
            return true;
        }


        return super.onOptionsItemSelected(item);
    }
}
```

- **PiAUISuite Voice Control System**

There are 970 lines of code, so we decide not to add it here. We have modified the code a little bit, but the original source code is available on this github page:

https://github.com/StevenHickson/PiAUISuite

I) Every group member must have reasonably and equally contributed to the Project 2 github repository. If that is not the case for any member and there is a valid reason as to why, please include an explanation here.

Everyone pushed his or her contributions to the github page