Progress Presentation-I

e-Yantra Summer Internship-2016

Exploring WICED Sense

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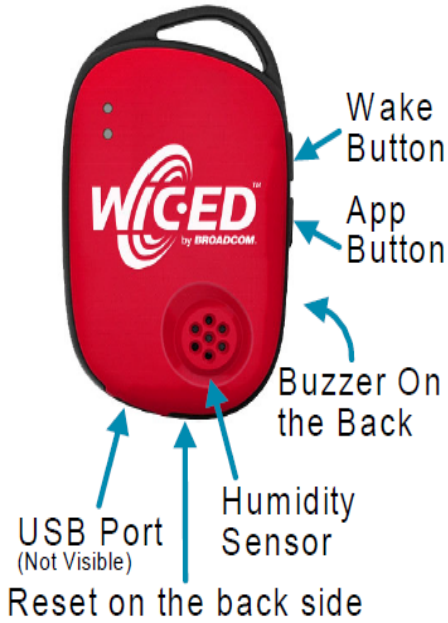
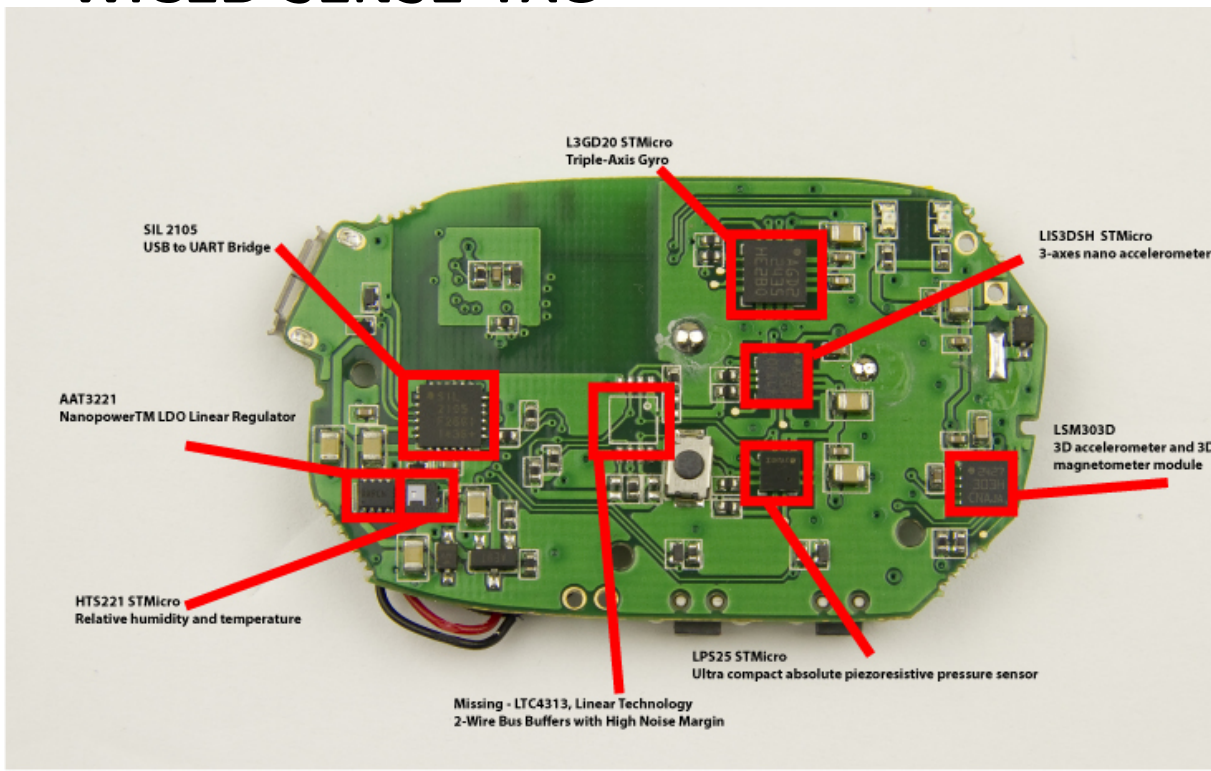
Overview of Project

- Project Title : Exploring WICED Sense
- Objective : To develop applications for Wiced Sense Tag and make a user friendly system which can be used in real world.
- Deliverables :
  1. Code to acquire data from wiced sense tag on local machine.
  2. Procedure for pushing the real time sensor data from wiced sense into database.
  3. Develop an effective algorithm for area mapping using Firebird V and wiced sense.
  4. Systematic documentation of developed codes and design procedures.

Introduction

WICED SENSE TAG





Introduction

What is BLE ? How is it different from other communication technologies ?

- Bluetooth 4.0 / Bluetooth Low Energy / Bluetooth Smart
- Lowest possible power consumption
- Specifically optimized for low cost
- Low complexity
- Low Latency
- Wide Interoperability Infrastructure

Overview of Task

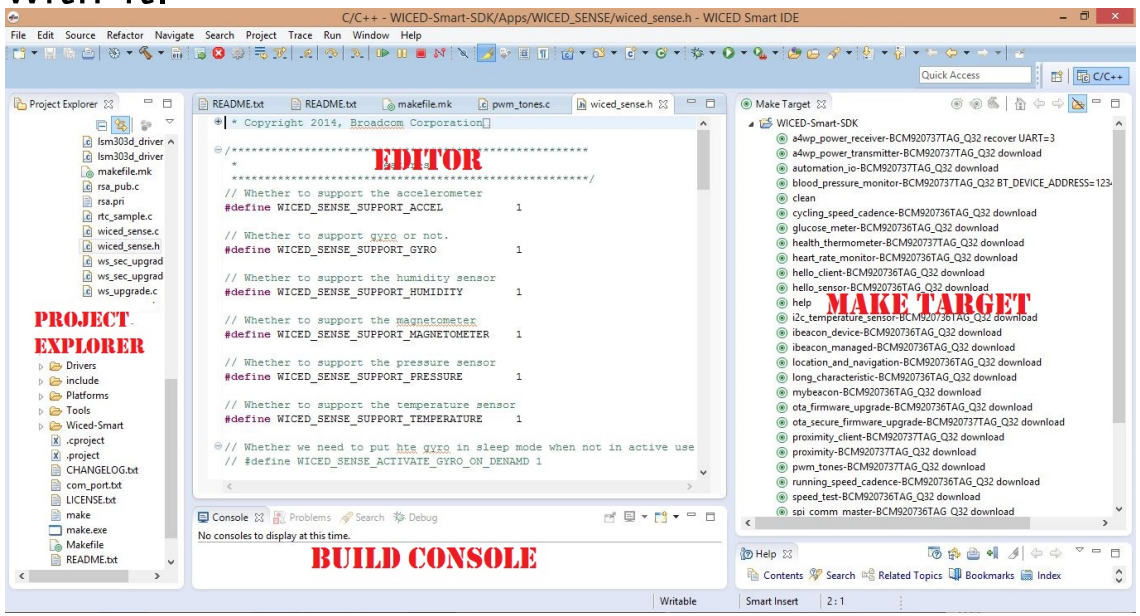
Sr.	Task	Deadline
1.	Download the SDK for WICED Sense, and get familiar with it	4 Days
2.	Go through different videos/documents related to WICED Sense and Display the WICED Sense data on the Desktop	4 Days
3.	Fetch the obtained data in the desktop to the online database	4 days

Overview of Tasks

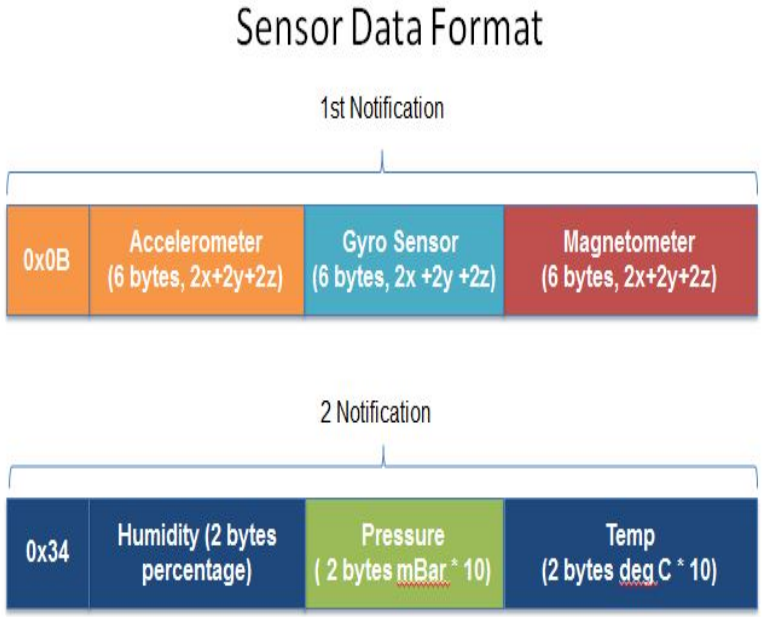
Sr.	Task	Deadline
4.	Develop a notification system making use of the fetched values Eg: 1) If the temperature of the room falls below say 30 C, notify the user 2) If speed of the object crosses a specified threshold value, the object should stop. Can be done with Firebird V for testing	6 Days
5.	Using the sensor values, develop an effective algorithm for mapping of Firebird V robot inside specific area	10 Days
6.	Implementation and calibration	7 Days
7.	Design Tutorial and systematic Documentation of project.	3 Days

Task Accomplised

- Downloading the SDK for WICEDSense, and getting familiar with it.



Task Accomplised



STM LPS25H – Pressure Sensor

STM LSM303D – Accelerometer and Magnetometer

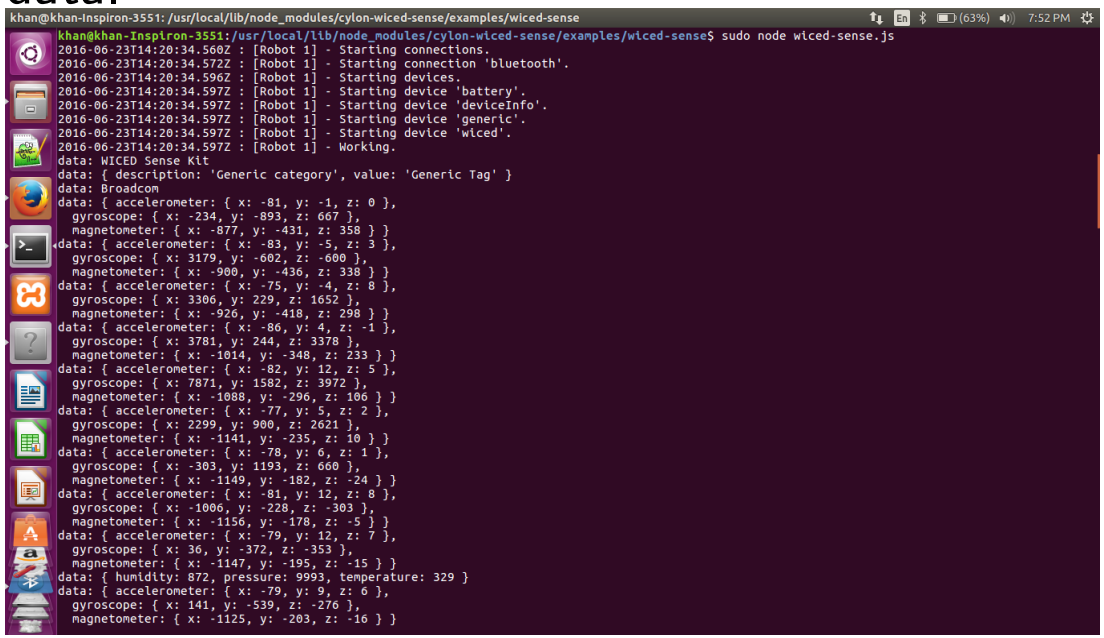
STM L3GD20 – Gyroscope

STM LIS3DSH – Accelerometer

STM HTS221 – Humidity and Temperature Sensor

Task Accomplished

- Connecting Wiced-Sense to the system and getting the device data.



Task Accomplished

- Converted the data into CSV format so that it can be easily extracted and inserted into mySQL database.

```
2016-06-30T04:12:54.795Z : [Robot 1] - Starting connections.
2016-06-30T04:12:54.806Z : [Robot 1] - Starting connection 'bluetooth'.
2016-06-30T04:12:54.835Z : [Robot 1] - Starting devices.
2016-06-30T04:12:54.835Z : [Robot 1] - Starting device 'wiced'.
2016-06-30T04:12:54.835Z : [Robot 1] - Working.
one, two, three, four, five, six, seven, eight, nine, ten, eleven, twelve, thirteen
[ 0, 0, 0, 0, 28, -54, 54, -176, 28, 44, -389, 827, -733 ]
[ 0, 0, 0, 0, 28, -53, 54, -181, 103, 13, -374, 825, -731 ]
[ 0, 0, 0, 0, 29, -53, 55, -299, -11, 97, -383, 825, -745 ]
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[ 0, 0, 0, 0, 28, -52, 56, -152, -1, 148, -380, 842, -745 ]
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[ 0, 0, 0, 0, 28, -52, 56, -216, -307, 46, -390, 819, -738 ]
[ 0, 923, 9995, 297, 0, 0, 0, 0, 0, 0, 0, 0, 0 ]
[ 0, 0, 0, 0, 29, -52, 56, -211, 35, 149, -389, 821, -748 ]
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[ 0, 0, 0, 0, 28, -51, 56, -242, -28, 71, -391, 824, -738 ]
[ 0, 0, 0, 0, 28, -52, 56, -190, 89, 79, -393, 809, -739 ]
[ 0, 0, 0, 0, 28, -52, 55, -196, -41, 115, -390, 813, -755 ]
[ 0, 0, 0, 0, 28, -51, 57, -217, 8, 46, -392, 824, -747 ]
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[ 0, 0, 0, 0, 28, -51, 56, -245, -62, 120, -384, 824, -748 ]
[ 0, 923, 9993, 297, 0, 0, 0, 0, 0, 0, 0, 0, 0 ]
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[ 0, 0, 0, 0, 26, -52, 57, -79, 623, -75, -393, 784, -816 ]
```
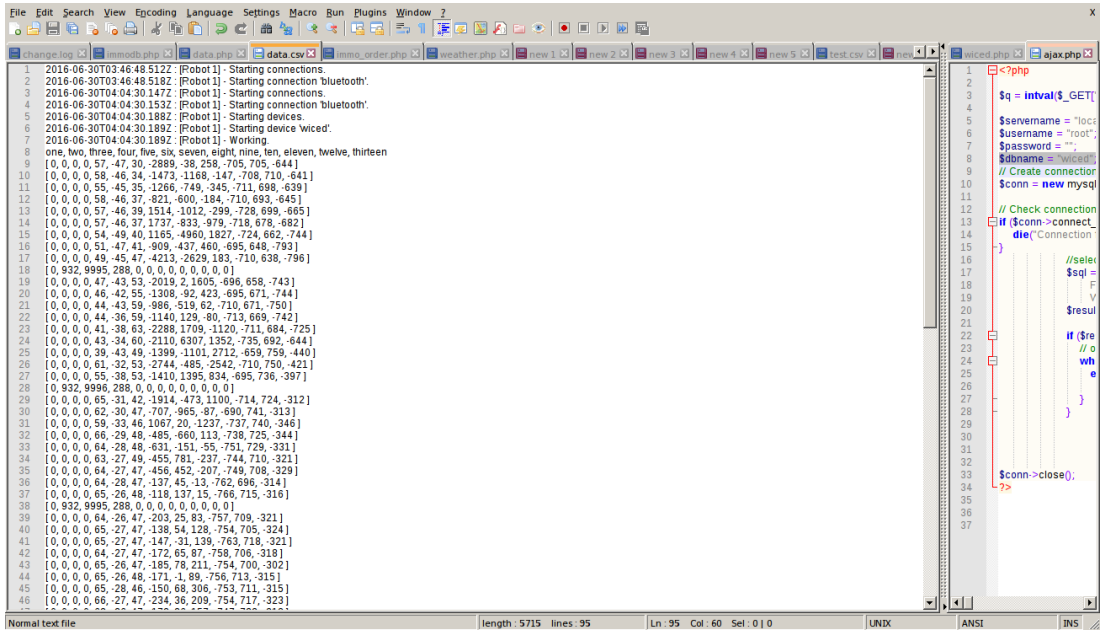
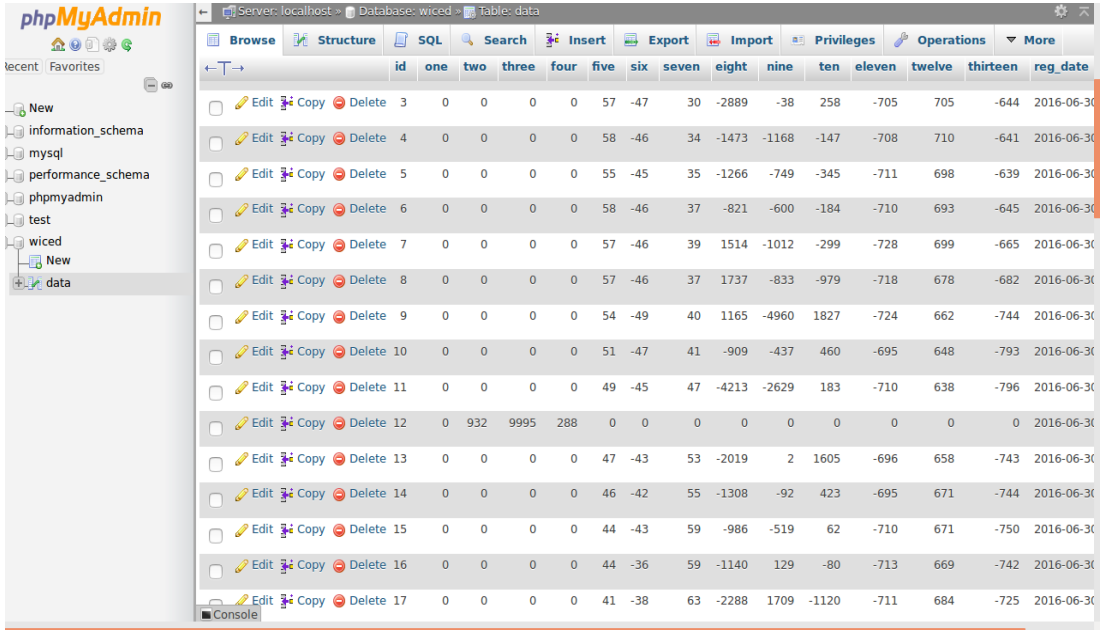

Task Accomplished

- Data from the terminal is logged into csv file on the local system.



Task Accomplished

- Pushed the data from local system to mySQL database.



Task Accomplished

- All the sensors data are fetched from the database and dynamically displayed on the webpage.

Working on..

- Plotting graph/charts to display real time sensor data.
- Making GUI for different applications.

Challenges Faced

- Installing Cylon js , Cylon-ble , Cylon-wiced-sense and all the other packages in ubuntu so that we acquire data from Wiced sense tag.
- Recovering firmware on wiced sense tag using wiced sdk.
- Pushing the data from local system to mySQL database.

Future Plans

- To develop a notification system which will alert the user of a particular event.
- To develop an effective algorithm for mapping of Firebird V robot using the sensor data from wiced sense.

References

- https://cylonjs.com/documentation/platforms/wiced-sense/
- https://www.bluetooth.com/what-is-bluetooth-technology/bluetooth-technology-basics/low-energy
- http://stackoverflow.com/questions/tagged/javascript

Thank You

THANK YOU !!!