PROJECT TITLE

A thesis submitted in partial fulfillment of the requirements for
the award of the degree of

B.Tech.

in

BRANCH NAME

By **NAME 1 (ROLL NUMBER)**

NAME 2 (ROLL NUMBER)

**DEPARTMENT OF
DEPARTMENT NAME
NATIONAL INSTITUTE OF TECHNOLOGY
TIRUCHIRAPPALLI-620015**

MAY 2017

BONAFIDE CERTIFICATE

This is to certify that the project titled **PROJECT NAME** is a bonafide record of the work done by

<div align="center">

NAME 1 (ROLL NUMBER)

NAME 2 (ROLL NUMBER)

</div>

in partial fulfillment of the requirements for the award of the degree of **Bachelor of Technology** in **BRANCH NAME** of the **NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI**, during the year 2016-2017.

PROJECT GUIDE NAME   **HOD NAME**

Project Guide   Head of the Department

Project Viva-voce held on   _____

Internal Examiner   **External Examiner**

ABSTRACT

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum

Keywords: Lorem ipsum dolor sit amet

ACKNOWLEDGEMENT

We would like to thank the following people for their support and guidance without whom the completion of this project in fruition would not be possible.

PROJECT GUIDE NAME, our project guide, for helping us and guiding us in the course of this project .

HEAD OF DEPARTMENT NAME, the Head of the Department, Department of DE-PARTMENT NAME.

Our internal reviewers, **REVIEWER NAME 1** , **REVIEWER NAME 2** , **REVIEWER NAME 3** for their insight and advice provided during the review sessions.

We would also like to thank our individual parents and friends for their constant support.

TABLE OF CONTENTS

List of Tables

List of Figures

Chapter 1

Introduction

1.1 Section Title

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum

1.1.1 Subsection Title

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum

As metioned in the article by Akram et al. [1] and the article by Xi et al. [2] we have ...

Sub Sub Section Title

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud

exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum

Chapter 2

Review Of Literature

2.1   An Example On How To Add Pictures

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum

Example of using a label to refer to a Figure 2.1

2.2   Fixed Image

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum

I want my image fixed here
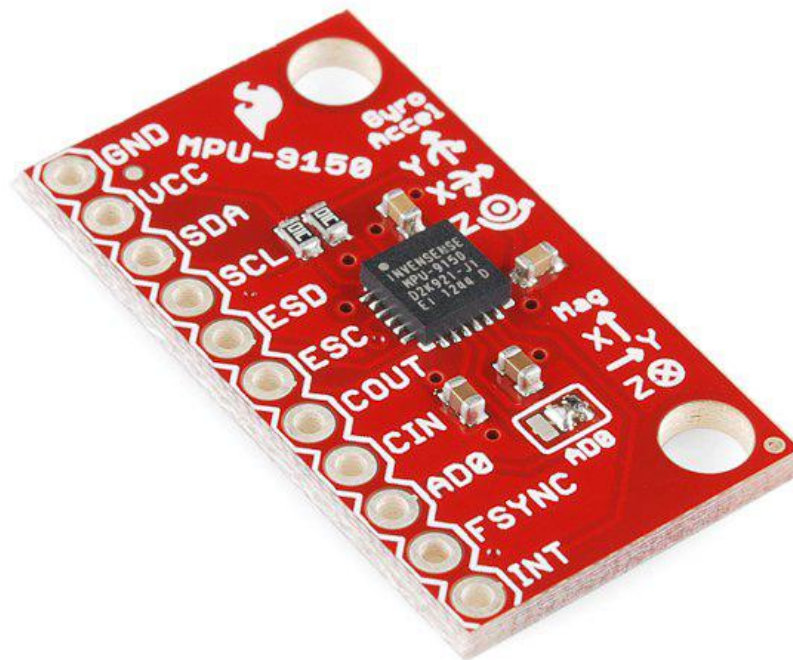
Figure 2.1: NodeMCU Chip Diagram

Figure 2.2: Inertial Measurement Unit

2.3 Example on Table Usage

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum

To refer to the table use the same 2.1

MPU 9150 Inertial Measurement Unit	NodeMCU Processor
Acceleration Range: 2G	Dual-Core 80 Mhz Processor
Gyroscope Range: 250 degrees/second	4MB Flash Memory
Magnetometer Range: 1200 micro Teslas	802.11 b/g/n connectivity
Communication Protocol: I2C	

Table 2.1: Sensor Specifications

Bibliography

[1] Duc A. Tran Akram Bayat, Marc Pomplun. A study on human activity recognition using accelerometer data from smartphones. *Procedia Computer Science*, 34:450–457, 2014.

[2] X. Long, B. Yin, and R. M. Aarts. Single-accelerometer-based daily physical activity classification. *2009 Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, Sept 2009.

Appendices

Appendix A

Code Attachments

A.1 Lorem Ipsum

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum

```python
def get_parameters(data, chunk_size=410):
  #Store the activity label to add later
  activity = data['Activity']
  '''
    Define a dictionary of functions. Sets of readings will be
    aggregated as per these functions
  '''
  func_dict = {
    'min': np.min,
    'max': np.max,
    'diff': lambda x: np.max(x) - np.min(x),
    'std': np.std,
    'iqr': stats.iqr,
    'rms': lambda x: np.sqrt(np.mean(np.square(x))),
    'mad': lambda x: x.mad(),
    'mediad': mediad
  }
  aggregations = {
    'X': func_dict,
    'Y': func_dict,
    'Z': func_dict
  }
  data_groups = []
  '''
    Transform the dataset into rolling windows of 410 readings each
    and store them in a Pandas data group.
  '''
```

```
26    for i in range(int(data.shape[0]/(chunk_size/2)) - 1):
27      temp = data.iloc[int(i*(chunk_size/2)):int((i+2)*(chunk_size/2))]
28      temp['k'] = i
29      data_groups.append(temp)
30    data_groups = pd.concat(data_groups).groupby('k', as_index=False)
31      #Run the aggregations on all data groups
32    stats_data = data_groups.agg(aggregations)
33    stats_data.columns = [''.join(col).strip() for col in stats_data.
        columns.values]
34    activity = activity.reset_index(drop=True)
35      #Add activity label
36    stats_data = pd.concat([stats_data, activity[:len(stats_data)]],
        axis=1)
37    del stats_data['k']
38    return stats_data
```