FINAL YEAR PROJECT (FYP)
RESEARCH METHODOLOGY:
PREPARING YOUR FYP REPORT

BY ASSOC. PROF. DR. NOR FARAHIDAH ZA'BAH
ELECTRICAL AND COMPUTER ENGINEERING DEPARTMENT
KULLIYYAH OF ENGINEERING,
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

FINAL YEAR PROJECT (FYP)
RESEARCH METHODOLOGY:
PREPARING YOUR FYP REPORT

ASSOC. PROF. DR. NOR FARAHIDAH BINTI ZA’BAH

2025

Author:
Assoc. Prof. Dr. Nor Farahidah Za’bah
Editor:
Assoc. Prof. Dr. Nor Farahidah Za’bah

Published by

NOR FARAHIDAH BINTI ZA’BAH
Electrical and Computer Engineering Department,
Kulliyyah of Engineering,
International Islamic University Malaysia,
Jalan Gombak, 53100, Kuala Lumpur, Wilayah Persekutuan
email: adah510@gmail.com

Preface

This publication was developed as a comprehensive guideline to assist students in preparing and completing their final year project, with a primary focus on engineering disciplines. However, the content and approach are broadly applicable to students in other fields as well. The material is drawn from my experience serving as the Final Year Project Coordinator from 2013 to 2020, as well as my ongoing role as a supervisor and examiner for both undergraduate and postgraduate students. Over the years, I have observed common challenges faced by students and recurring gaps in project planning, execution, and reporting. This guide aims to address these issues by offering practical advice, structured processes, and useful examples to support students throughout their final year project journey.

It is my sincere hope that it will serve as a helpful companion for students and educators alike in navigating the final year project process with greater clarity and confidence

Assoc. Prof. Dr. Nor Farahidah Za’bah

TABLE OF CONTENT

ABSTRACT

A good summary of your project
What are your findings?

Example 1

Currently, the cell-based biosensors have to be connected to an expensive impedance analyzer in order to obtain the measurement values. In addition, the impedance analyzer is bulky and not easily portable. **Therefore, in this work, a low frequency impedance analyzer is designed by generating a low frequency AC signal that is sent to the sensor in order to measure the impedance of a cell. The prototype design is able to detect the presence of water and a cell media. It consists of a biosensor which requires a low frequency AC input signal, and the impedance data of the water and cell media is to be measured and displayed using an Arduino system. The design had successfully shown that the prototype is able to detect and differentiate the two different substances based on their resistance and capacitance.**

Problem statement

What your project is going to achieve?

Methodology

Findings

Example 2

Problem statement

Drivers can easily be distracted by their handheld devices while they are driving, and this ultimately contributed to the increase of road accidents. **This work proposed a steering wheel cover that is designed using an array of touch sensors TTP223 and Raspberry Pi 3 microprocessor**. **A tilt sensor is also incorporated in order to mimic the movement of the system. Using Python as the main programming language and the Raspbian OS, for a sample size of 40 touch inputs**, **the system yielded an accuracy of 97.5 % and 75.0 % in its input detection during stationary and driving mode. The results have shown that as a proof of concept, the proposed system is capable of detecting touch inputs from the user's hand and determining the position of the hands on the steering wheel.**

What your project is going to achieve?

Methodology

Findings

Example 3

Smoking has been an underlying problem which contains the harmful chemical nicotine causing lung diseases and high blood pressure. These ailments not exclusively will just occur to the smokers but also to the secondary smoker who unconsciously inhales the smoke produced by irresponsible smokers.

It has been recently found that 21.3% of people in the nation smoke with all age groups combined, and almost 45% of the male population smoke. Almost 1% of women were smokers and the most unsettling data found that one in ten youngsters under the age of 12 has smoked a cigarette. About 17.4% of adolescents aged 13 to 15 will smoke. Hence, this project is initiated to prevent students in schools and people in public spaces from smoking.

This part of the abstract is disconnected. Should focus on nicotine detection

This project aims to find the best electrodes to be implemented using screen-printed carbon electrodes as nicotine sensor. The process will undergo cyclic voltammetry in a phosphate buffer solution (PBS) and then into a nicotine solution to determine the optimum sensor performance.

Improvement to Example 3

Smoking has been an underlying problem which contains the harmful chemical nicotine causing lung diseases and high blood pressure. These ailments not exclusively will just occur to the smokers but also to the secondary smoker who unconsciously inhales the smoke produced by irresponsible smokers.

However, the current application of detecting nicotine in chemicals has always required lab work, which is time-consuming and impractical for everyday use. Researchers have been looking for portable and pragmatic ways of developing nicotine sensors and one of the method is using screen-printed carbon electrodes that offers mobility and ease of use.

This section is now improved to add a problem statement

This project aims to find the best electrodes to be implemented using screen-printed carbon electrodes as nicotine sensor. The selection of electrodes will undergo cyclic voltammetry in a phosphate buffer solution (PBS) and then into a nicotine solution to determine the performances of each electrode.

- **So, in conclusion, a good abstract**
  - should have all important information which are clearly organized and summarized
  - should provide a good understanding on what the project is all about

CHAPTER 1 – INTRODUCTION

Introduction to your project

Introduction should have

1.1 Overview of the project
1.2 Problem statement
1.3 Objectives
1.4 Methodology
1.5 Organization of the report

1.1 OVERVIEW OF THE PROJECT

- An **OVERVIEW** of your project can be constructed by looking at the **keywords** in your title.

Example 1

Arduino-Based AC Input Signal Generator Circuit for Biosensor Impedance Measurement

Electrical cell-substrate impedance sensing (ECIS) is a valuable tool for real time monitoring of cell behavior such as attachment, mobility, and growth. In order to employ ECIS, the cells need to attach, spread and proliferate on the sensor in the presence of adhesion-promoting protein that mimics the extracellular matrix (ECM) of the cells.

The impedance change due to the cell growth and attachment was modeled as an equivalent circuit consisting of resistors and capacitors of both the cell culture media and the cells.

Example 2

Investigation on Polymer Based SAW Sensor to Detect Volatile Organic Compound (VOC)

Volatile Organic Compounds (VOCs) such as acetone, benzene, and toluene can be detected using commercially available sensors such as pellistor sensor. The sensor detects VOCs by diffusing a mixture of air and VOCs through a porous sensor surface. The main element of the porous sensor is a coil that is made from platinum wire. However, the main problem with this type of sensor is it needs to be heated up to hundreds of degrees by allowing the electric current to pass through the platinum wire. Thus, this sensor is not suitable to be used at room temperature. Another type of sensor that can be used to detect VOCs at room temperature is the SAW sensor where it uses a sensing layer such as metal oxides, polymers, and carbon nanotubes.

1.2 PROBLEM STATEMENT

- There should be a nice continuation between the **OVERVIEW** section and the **PROBLEM STATEMENT**

Example 1

Arduino-Based AC Input Signal Generator Circuit for Biosensor Impedance Measurement

Currently, the impedance measurements were performed using an impedance analyzer which is **expensive and also bulky**. Efforts have been made to design a portable impedance measuring system.

Therefore, this work will focus on producing a **low-cost impedance analyzer** that it is able to detect and differentiate different substances based on their resistance and capacitance. The prototype must be able to perform the measurements using a biosensor at which the impedance data is measured and displayed using an Arduino system.

Example 2

Investigation on Polymer Based SAW Sensor to Detect Volatile Organic Compound (VOC)

As mentioned in the overview section, SAW sensor uses a sensing layer such as metal oxides, polymers, and carbon nanotubes. However, in comparison with polymers, the **sensitivity of metal oxides is low at room temperature**, and they may exhibit a very long recovery time due to the involvement of redox reactions unlike polymers that generally absorb the gases via physisorption. In addition, SAW sensor with metal oxide layer needs to operate at a **high temperature environment** to react with the gases.

Therefore, this project will focus on simulating a SAW sensor using polymer as the sensing layer and its sensitivity and selectivity will be investigated by varying the relevant parameters such as the thickness of the polymer layer and the concentration of the VOCs.

- **So, in conclusion, a good problem statement**
  - Should demonstrate a high understanding on the topic with a **valid** and **concise** problem to solve.

1.3 OBJECTIVES

You should have a set of objectives - not a paragraph

- Example of **keywords**
  - To **investigate..**
  - To **analyze..**
  - To **design..**
  - To **validate..**
  - To **simulate..**

Example 1

- The main objectives in this research are:
  i. To design an AC input signal to be connected to the biosensor
  ii. To design an Arduino-based portable output system for the impedance measurement
  iii. **To analyze and categorized the obtain data**

In terms of what parameters?
Accuracy? Repeatability?

Example 2

This project can be summarised with the following objectives:

- **To characterize graphene, graphene-oxide, and reduced graphene-oxide**
- To perform electroanalytical measurement on modified graphene, graphene-oxide, and reduced graphene-oxide for nicotine sensor application.
- To test and validate the sensor's performance in terms of sensor linearity and peak current.

In terms of what?

Example 3

There are three objectives of this project which are:

- To model and simulate the SAW sensor with different sensing layers to detect VOCs which are acetone, benzene and toluene.
- To investigate the relationship between the thicknesses of sensing layer, concentration of VOCs and sensitivity.
- **To provide recommendations for future research directions and technological advances in the field of VOC detection utilizing SAW sensors.**

This objective is too general and not concise enough

Remember! Not a paragraph but a set of objectives

The main objective of this project is to develop a river depth and water velocity monitoring circuit that can collect and transmit data to a local server using the LoRaWAN network. The collected data will be visualized through Grafana using the MQTT protocol. The system aims to provide accurate and real-time river data for various applications, such as flood prediction, hydrological analysis, and environmental monitoring.

- To **investigate** existing river monitoring systems, data storage platforms and communication protocols such as MQTT.
- To **design** a user-friendly dashboard accessible via the internet by using LoRaWAN network technology
- To **test** the functionality of the system in terms of data accuracy and response time

- **So, in conclusion, a good set of objectives**
  - should demonstrate that the overall purpose for this project/work is/are stated in a clear and concise manner

1.4 METHODOLOGY

Explain in one paragraph your proposed methodology – no need flowchart as this will be introduce in Chapter 3

Example 1

Initially, the design of a circuit that produces a low frequency AC input signal is perform using simulation tools such as PSPICE.
The circuit is initially tested as an input to a resistor and capacitor and their values are displayed using the Arduino system.

Then, the biosensor is connected to the input signal circuitry and the controlled data is measured.

Finally, the resistance and capacitance are measured when different substances are placed in the biosensor chamber. The measured data is then compared with the controlled data.

1.5 REPORT ORGANIZATION

Example 1

The body of the report consists of five chapters ....
This chapter gives an overview on the problem statement, methodology and the objectives of this project.
An overview on past research done on the bioelectrical impedance measurement related to this work is presented in Chapter 2.
The methodology of this work is presented in Chapter 3. It consist of...
Chapter 4 is the documentation of the result analysis and discussion.
Future work and some concluding comments are presented in Chapter 5..

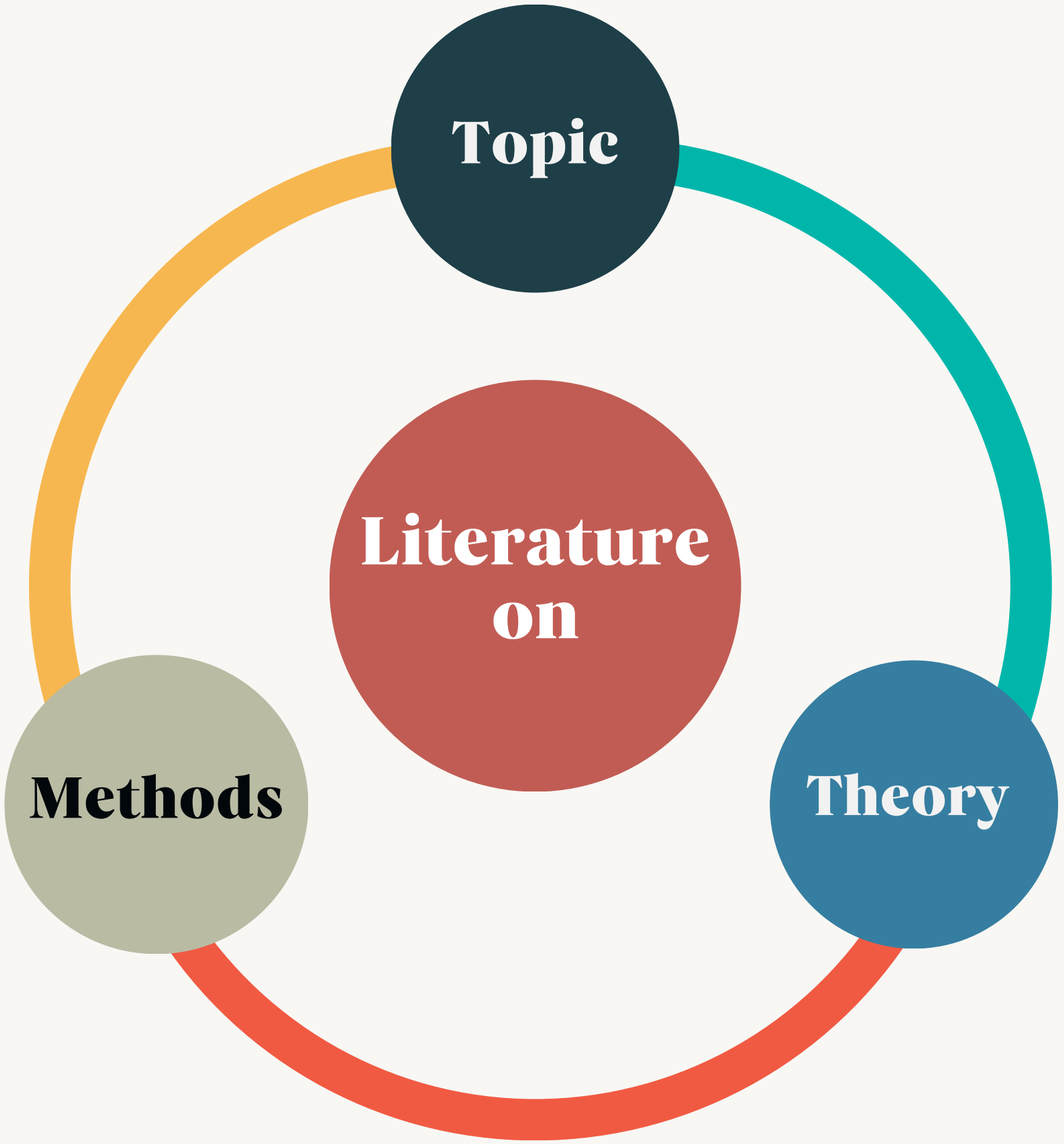
CHAPTER 2 – LITERATURE REVIEW

Overview of the previously published works on a topic.

Discuss the literature and provide your thoughts and opinions to show elements of **critical thinking**

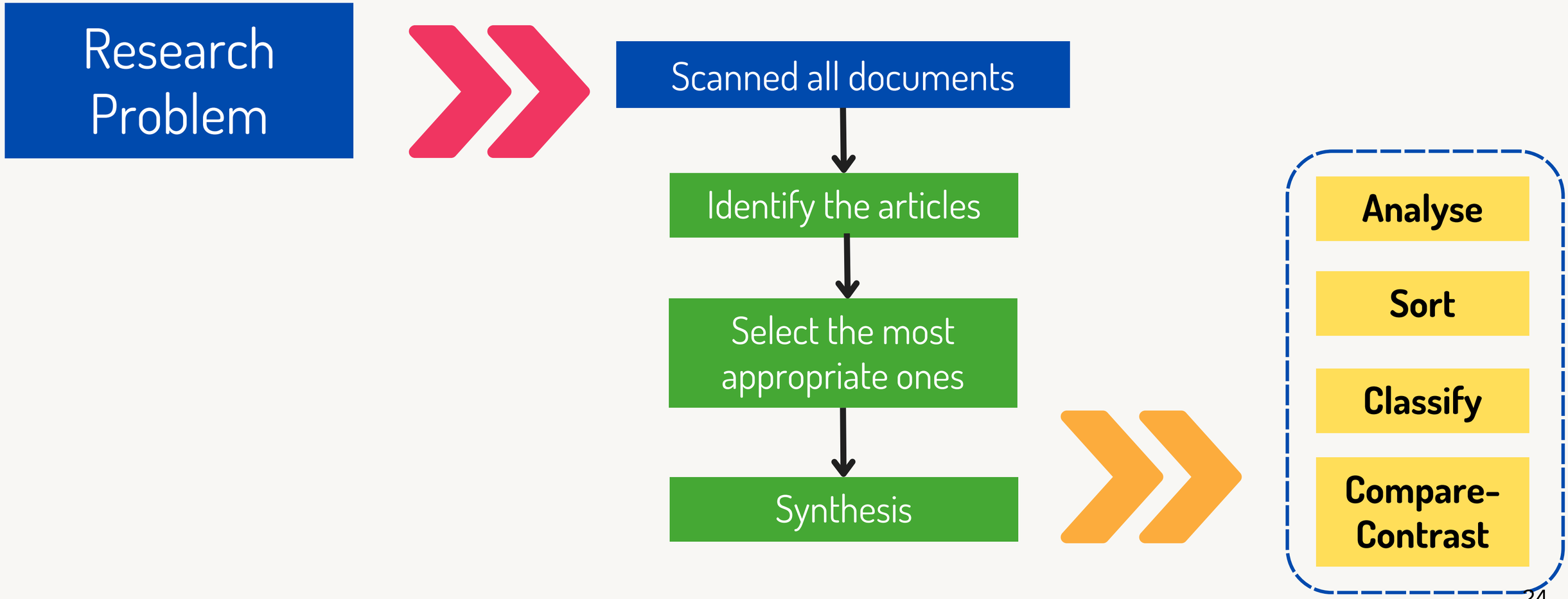
- JOURNAL PAPERS
- ARTICLES
- BOOKS
- WEBSITES

and many more



REMEMBER : Do not forget to reference the literature properly

FLOW OF CRITICAL LITERATURE REVIEW



- Impose minimum references: 10-15 references (references latest last 5 years)
- Journals and conference papers
- Textbooks
- How to get references?
  - IEEE Xplore
  - IEEE Transactions – Resource Center
  - Google Scholar

CATEGORIZING YOUR THE LITERATURE REVIEW

The introduction must clearly highlight WHAT you will cover in this review. This is particularly important in a large topic area.

2.1 Overview

Example:

Internet of Things (IoT) has become most common things nowadays. This is because of the existence of cloud storage that enables everyone to access their data everywhere and sharing that information with anyone that they wanted to. With the growing the number of users that used cloud storage, many manufacturers have started to build platform for the developer to build something that they referred to as smart object. This smart object is the gateway between our physical world and the internet where it allows information to be spread very fast.

There are three main components in an IoT system which are sensor, gateway and user interface as shown in Figure 2.1. These three components are essential in order to build an IoT system. In this chapter, all these modules will be discussed to determine the right component that is needed to make a working prototype for this project.

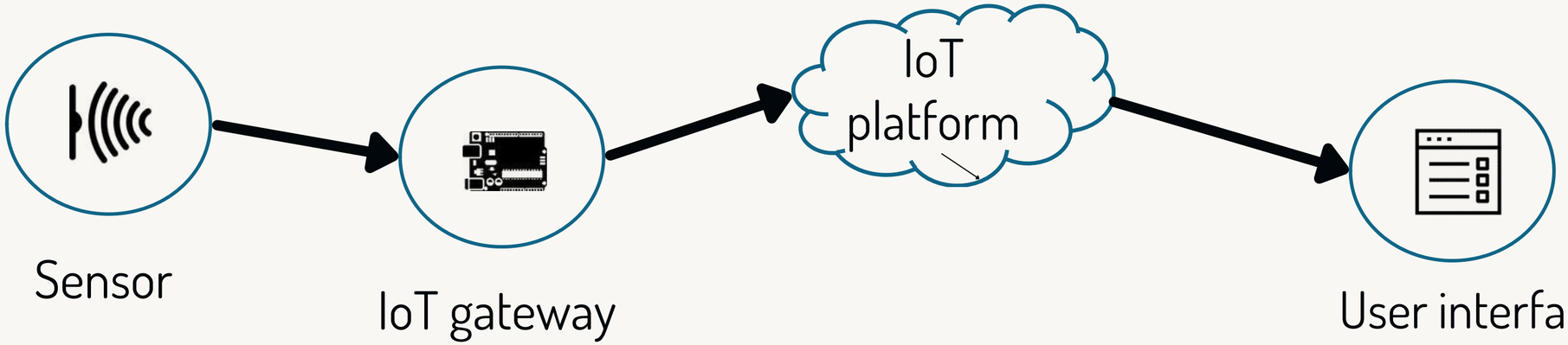


Figure 2.1 – Main Components of IoT

NOTE: Every Figures must be referred to in a text and the figure should be placed after the text.

Example on how to structure your Chapter 2:

2.2 Sensors	This section will be documenting the overview on the type of sensors that can be used for the application related to the title.
2.2 IoT Gateway	This section will be documenting the comprehensive overview of IoT Gateways, their functionality, and applications that relates to data collection
2.3 IoT Platform	This section will demonstrate the role of IoT platforms in the IoT ecosystem, their functionality, and their impact on different applications that relates to data monitoring
2.4 User Interface	This section will explain on the user interface for IoT applications that allows users to interact with and control IoT devices and systems.

LINKING MULTIPLE RESOURCES

As you can observed, there is a comparison using keyword such as **similarly**, **however**, **supported by** to link multiple resources

Example 1

Most of the publications had utilized this approach to produce lateral silicon nanowires which are fabricated from silicon or silicon on insulator (SOI) substrates [1, 2]. Experiments performed by Ciucci et al [3] and Pennelli et al [4] for example had used SOI as the starting substrate. **However**, the patterning was also achieved using electron beam (e-beam) lithography, which is not suitable for high-volume manufacturing because of its limited throughput.

Example 2

Some publications [1 -3] have made the observation that the silicon nanowire surface could be depleted of charge carriers due to the presence of native oxide resulting in the reduction of conducting cross-sectional area. **However**, most of the published work is studying the effect of depletion with cylindrical cross-sectional area and not a triangular cross-sectional area.

Example 3

For e-beam lithography, the patterning is performed serially which is very slow compared to a parallel technique such as photolithography in which the entire surface is patterned at once. Another fabrication technique, as used by Sheu et al [1] is Scanning Probe Lithography. It is a technique that uses the tip of a scanning probe microscope to create a pattern. **Although** this method is cheaper than e-beam lithography, it is relatively hard to control. A more cost-effective approach is to use photolithography as the patterning mode. There are also a number of published papers [1-3] that used photolithography as a mean to fabricate silicon nanowires using SOI. **However**, the fabricated nanowires were usually wider than the nanowires produced using high resolution lithography.

KEYWORDS

Suggest (that)	Recent studies outlined by Leonard et al [1] **suggest that** personality and disposition play an equally important role in motivation.
Argue (that)	Leonard et al [1] **argue that** there are three elements of self perception.
Conclude(s) (that)	Reviewing the results of the case study, Taylor [1] **concludes** that the theories of job enrichment and employee motivation do work.
State	He further **states** that there is an increasing importance on the role of autonomy and self regulation of tasks in increasing motivation.
Found (that)	Mullins [1] **found that** there is an increasing importance on the role of autonomy and self regulation of tasks in improving motivation.

Establish(ed) (by)	As **established by** Csikszentmihalyi [1] 'the more students feel in command of their learning, the more they fulfil their learning potential'.
Asserts (that)	Locke's Goal Setting Theory **asserts that** setting specific goals tends to encourage work motivation [1]
Show(s)	Various theories of motivation **show** employers that there are many factors that influence employees work performance.
Claim(s) (that)	Hackman and Oldham [1] **claim that** people with enriched jobs, and high scores on the Job Diagnostic Survey, experienced more satisfaction and motivation.
Report(s)	Mullins [1] **reports** on four content theories of motivation.
Mention(s)	Mullins [1] **mentions** two common general criticisms of Herzberg's theory.

TABLE OF SUMMARY

At the end of your literature review chapter, you can produce a 'Table of Summary' that shows the comparison for each previous research done by other people

For example:

Ref	Article	Sensor	IoT gateway	User Interface
[1]	Unobtrusive Wi-Fi system for human monitoring	Proximity sensor PIR sensor	CC3200	Bluemix Watson
[2]	IoT based monitoring and control for home automation	PIR sensor	Raspberry pi	Web Apps • HTML
[3]	Body Temperature Measurement for Remote Health Monitoring System	Temperature sensor	Arduino Uno +XBee	Web Apps • HTML • MySQL
[4]	Design and implementation of an IoT gateway to create smart environments	Temperature sensor Humidity sensor pH sensor	Arduino Uno Raspberry pi	Web Apps • HTML • PHP • MySQL

IMPORTANT!

Hence by referring to the table, you can make decisions on your methodology. What software to use? Why you choose that software? And so on

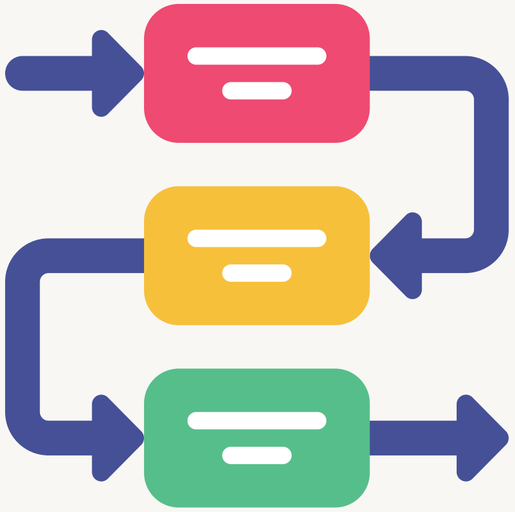
Example of Conclusion

In any IoT based project, three main components should be identified to make a working IoT architecture. The first component is the sensor. Based on this literature review, there are three sensors that most suitable to use for detecting lecturer presence, PIR sensor, proximity sensor and camera. Hence, this project proposed to use the proximity sensor due to its low cost and its ability to detect distance. The camera might be the best solution among three sensors; however, its high cost and complex algorithm can be a challenge. For PIR sensor, its ability to only detect movement makes it limited to detect when lecturer in a static position.

The next component is the IoT gateway. For this project, Raspberry Pi will be used because it is one of the most common IoT gateway component used in IoT project. In addition, the build-in Wi-Fi connectivity and its low cost also makes it favorable for this project.

The last component is the user interface. The best user interface to use in this case is web apps. The reason behind this is that this project is in still in preliminary phase and therefore, using a web application can be a good starting point as a proof of concept.

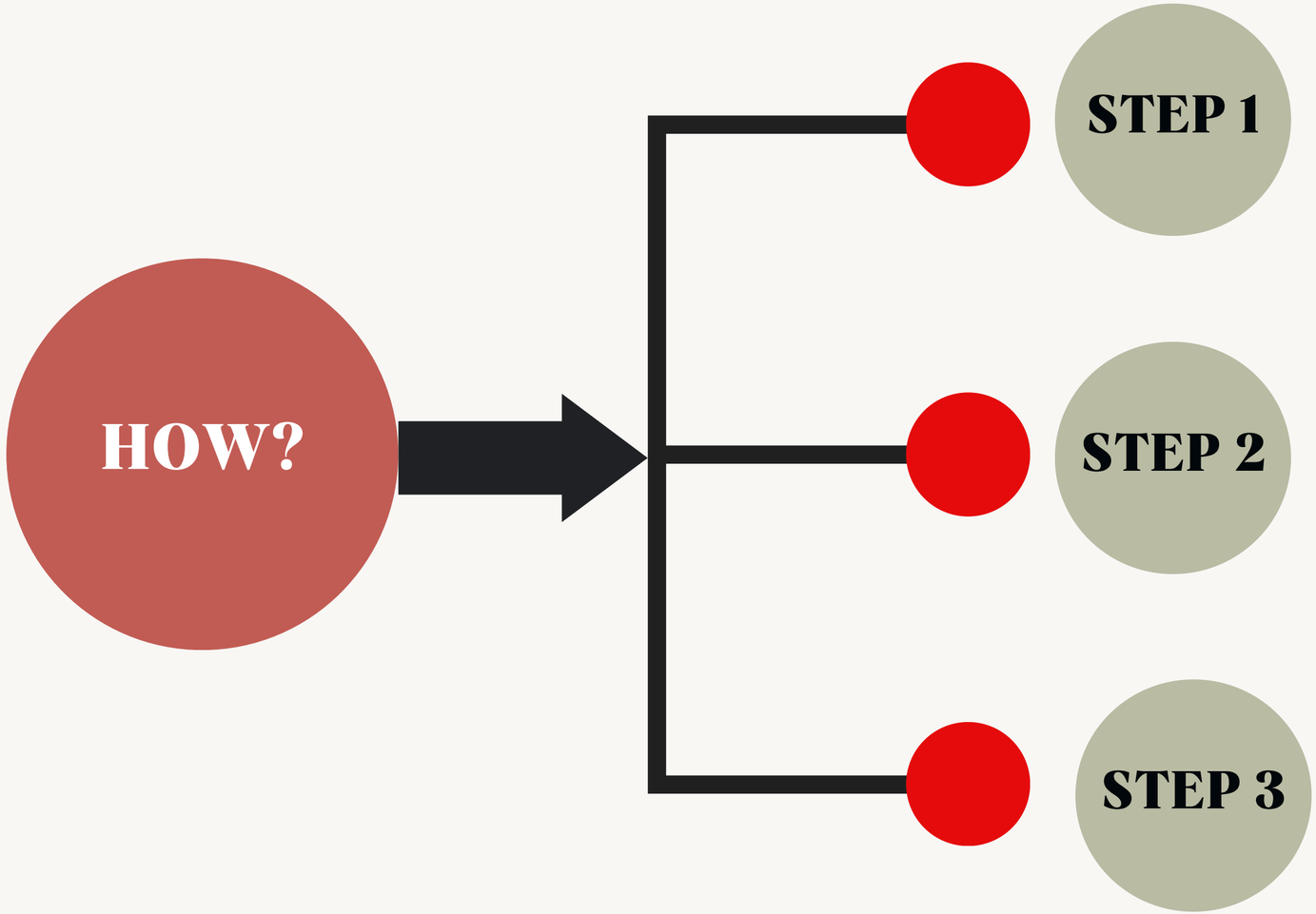
- **So, in conclusion, a good literature review**
  - Should demonstrate good critical thinking skill with balanced views from various perspectives. The findings/results of articles were thoughtfully compared, contrasted and/or connected to each other.
  - Should show how the knowledge and information from a variety of resources are effectively synthesized to produce a good strategy to achieve the objectives.



CHAPTER 3 – METHODOLOGY

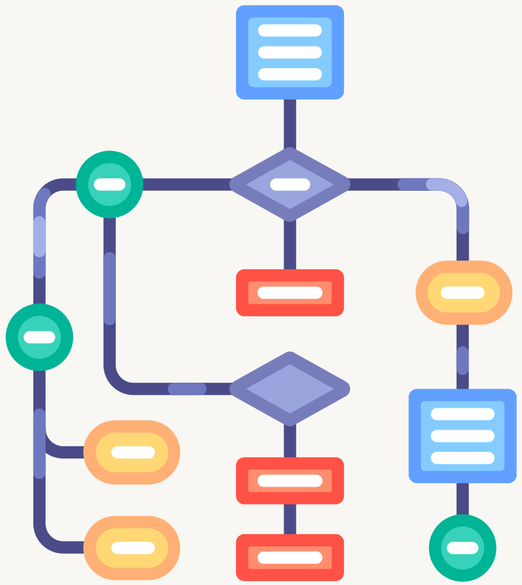
Approach and Procedures to Solve the Problem

This chapter will be documenting the procedures of your work and project

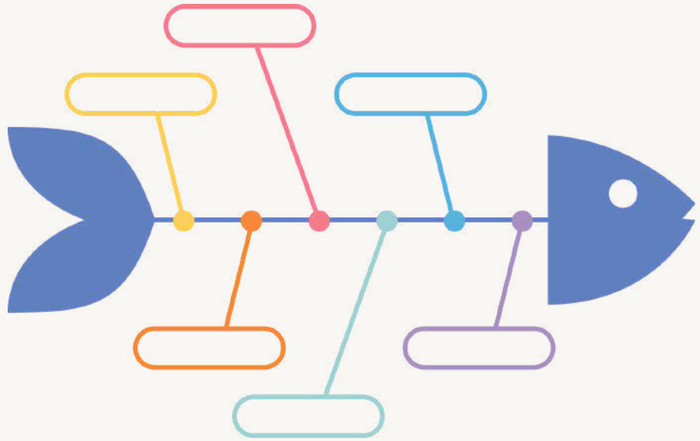


FLOW OF YOUR METHODOLOGY

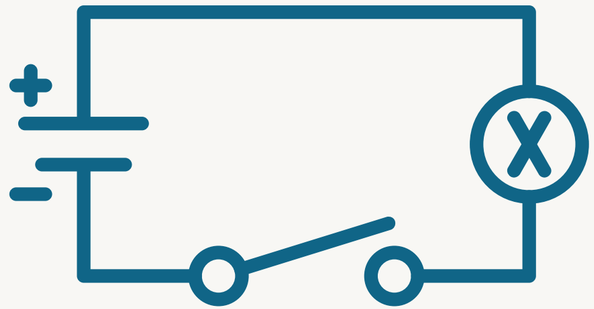
The first part of this chapter should start with a paragraph that describes your flowchart/pictorial diagram/schematic diagrams.



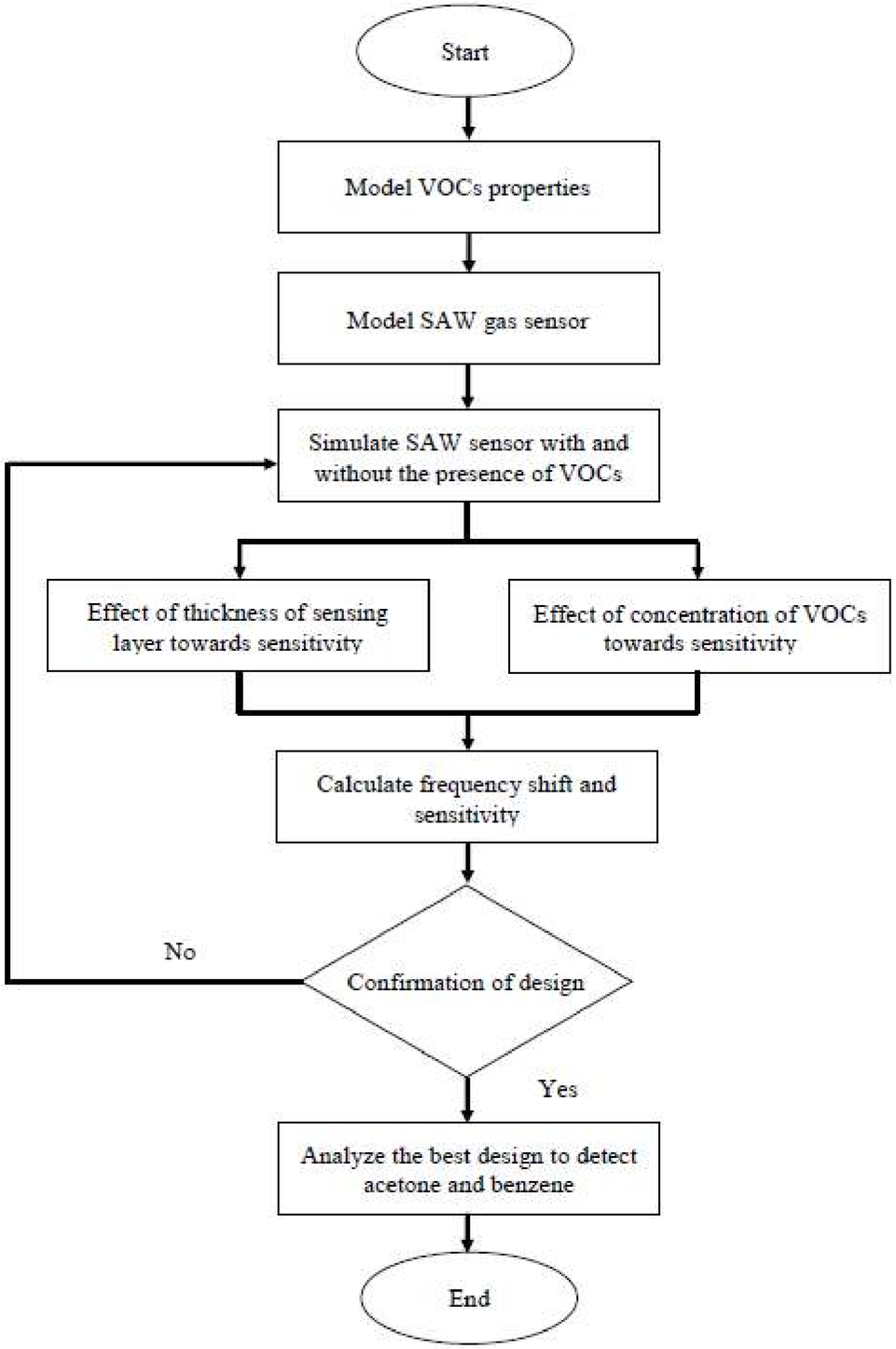
FLOWCHART



PICTORIAL DIAGRAM



SCHEMATIC DIAGRAM

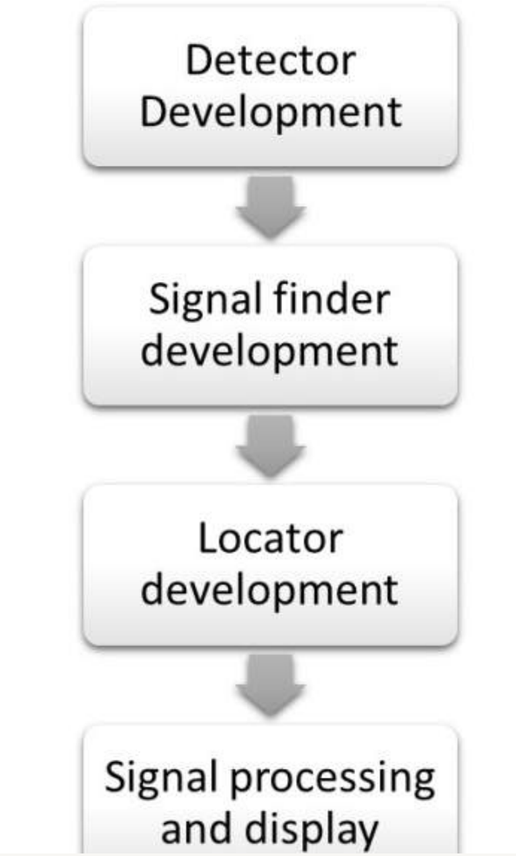


Example 1 – Flowchart

Figure 3.x shows the detailed steps taken to model and simulate the SAW sensor using COMSOL Multiphysics software. Initially, modelling of VOCs was performed based on the five parameters which were concentration of VOCs in ppm, concentration of VOCs in air, molar mass of VOCs, air partition constant for VOCs and mass of concentration of VOCs in the polymers.

Then, modelling of SAW sensor with two types of polymers was performed. However, as the polymers were not listed in the library of material in COMSOL Multiphysics software, the parameters of the polymers were filled in manually. The parameters needed for each polymer were Young's modulus of polymer, Poisson's ratio of polymer, density of polymer and relative permittivity of polymer.

Example 2- Another alternative to flowchart is showing stages of your work

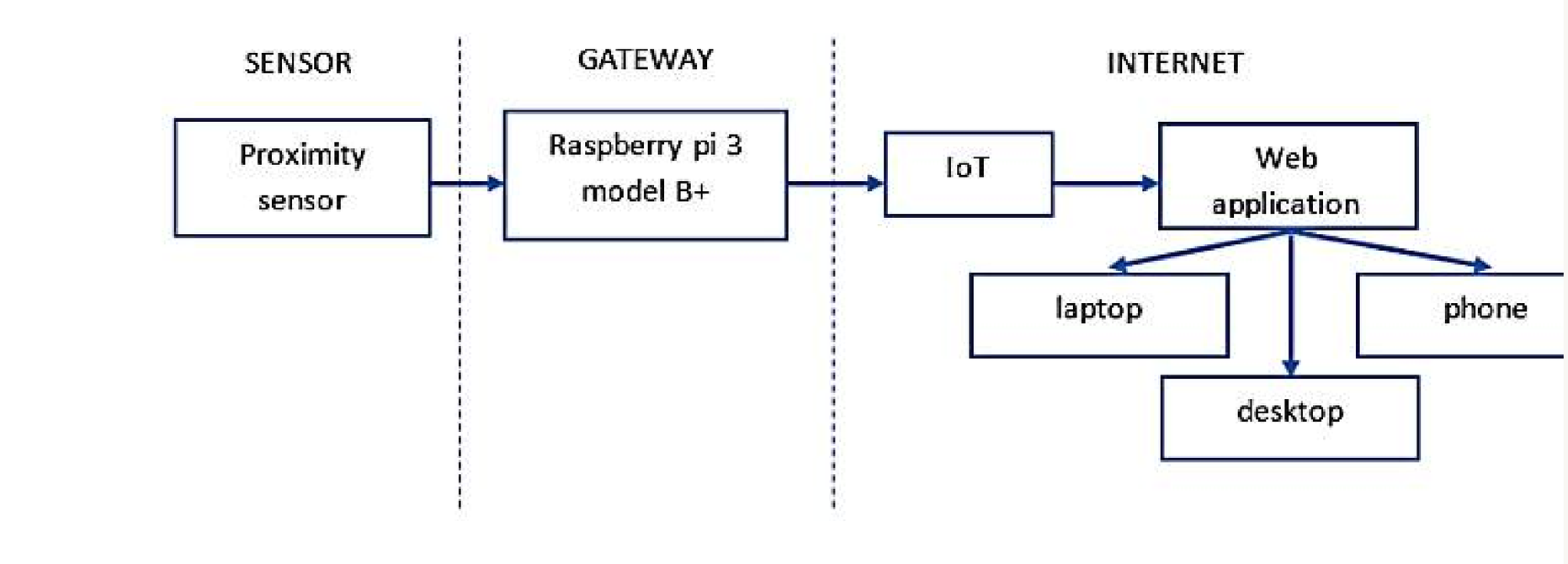


- Develop algorithm to compute the signal position
- Algorithm simulation and evaluation

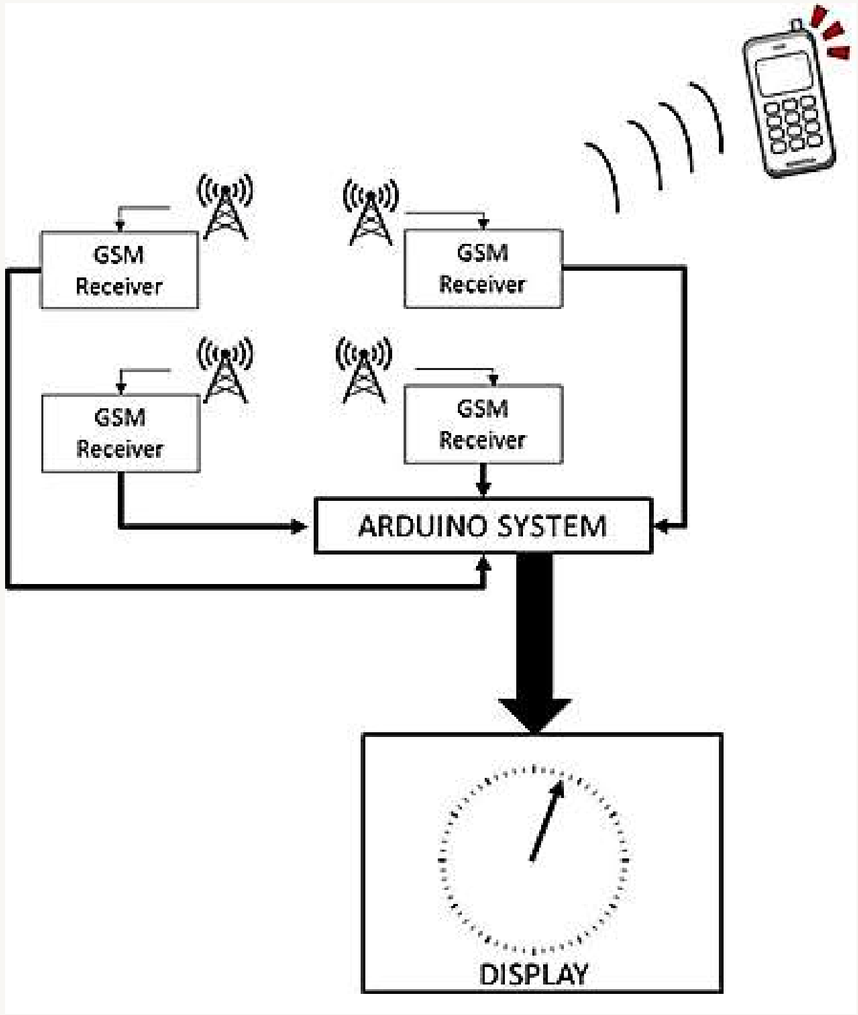
- Identify display interface
- Optimize parameter setup configuration
- Test and debug

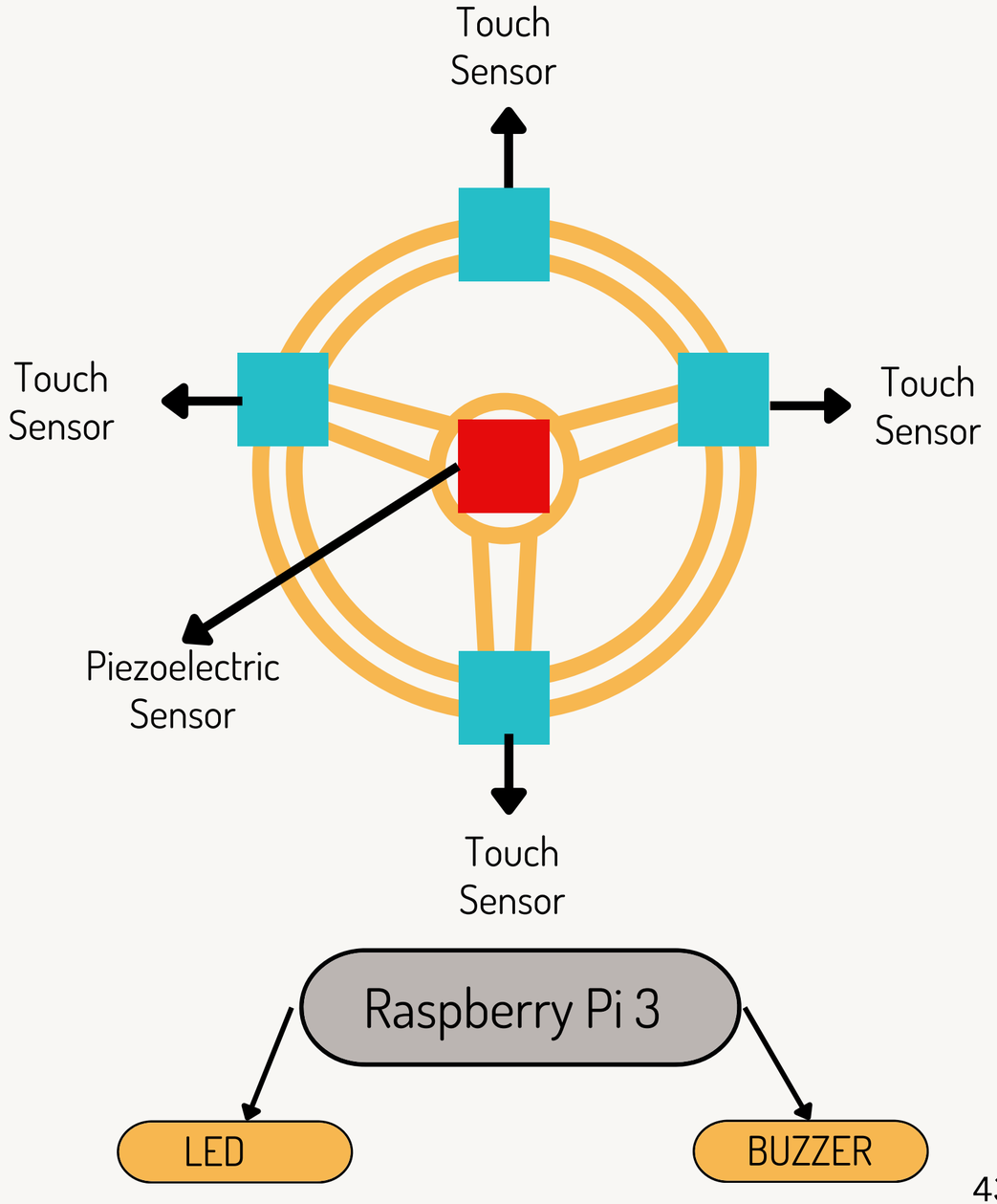
Example 3- Pictorial Diagrams

Figure 3.x, shows the detail of the system architecture. Sensor that will be used for this project is a proximity sensor. The sensor will be connected to a Raspberry Pi model B+ as the gateway to the IoT. All the data will be stored in the cloud where the user will be able to access it by using web-based application. Web apps will request access from the server to extract the data in order to view the presence of the lecturer.

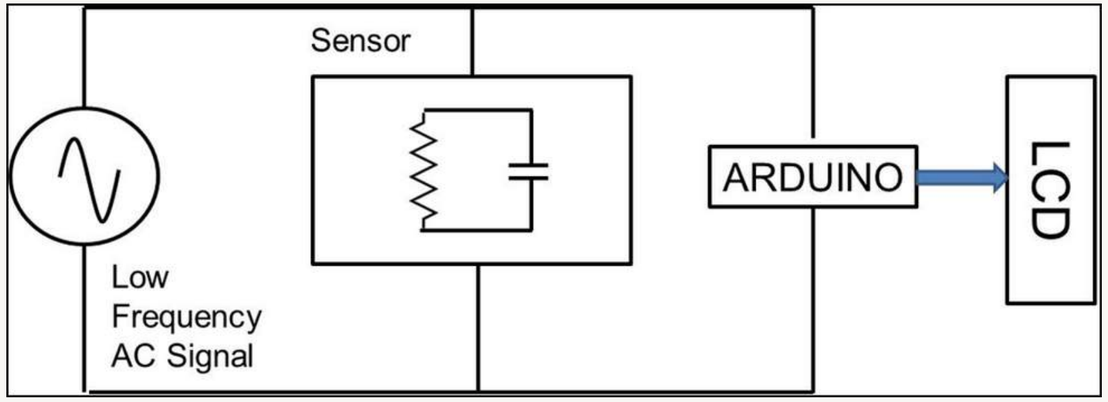


Other examples of pictorial diagrams





Example 4 – Schematic Diagrams



In the figure, the sensor behaves like a resistor which requires a low frequency AC input signal. The function of timer circuit is to produce a low frequency to support the cell inside the biosensor.
After the detection, the impedance data will be taken based on day 1, day 2 and so on. The impedance data is proposed to be measured using the Arduino system and the value is then displayed using an LCD

PRELIMINARY RESULTS

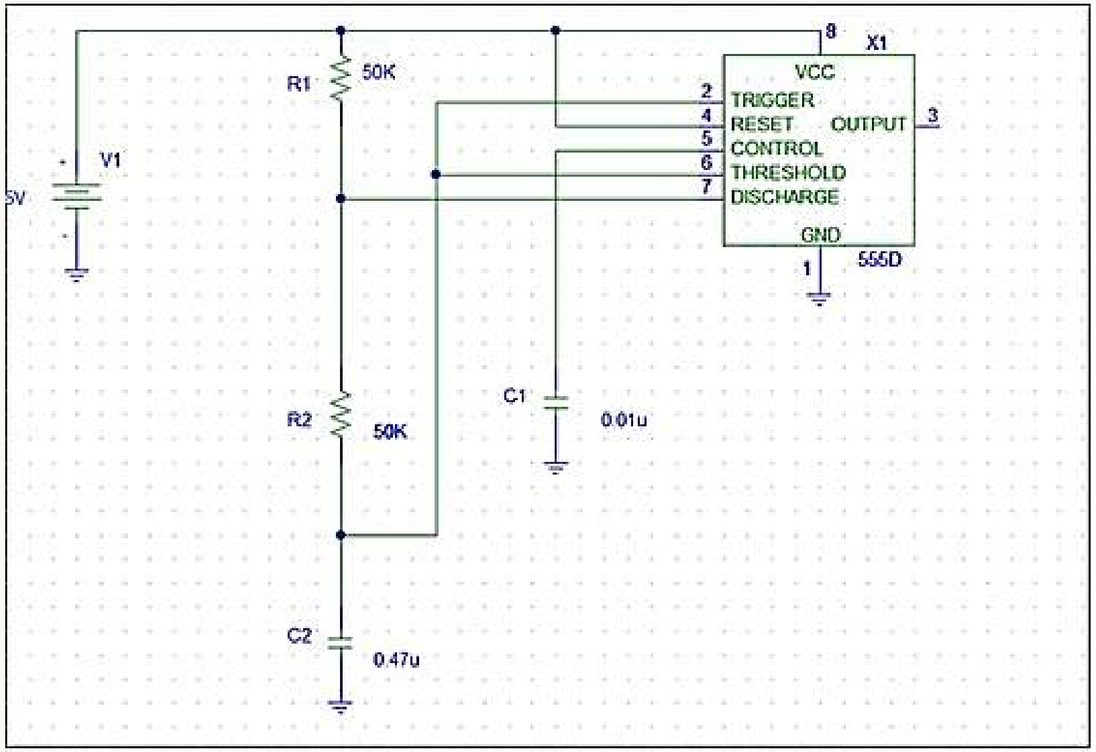
Including preliminary results in the methodology chapter can be appropriate in certain cases.
It depends on the purpose they serve within the context of your research. Here are some scenarios where it might make sense:

Illustrating Method Development: If preliminary results are used to demonstrate the development or validation of your methods such as the calibrating process

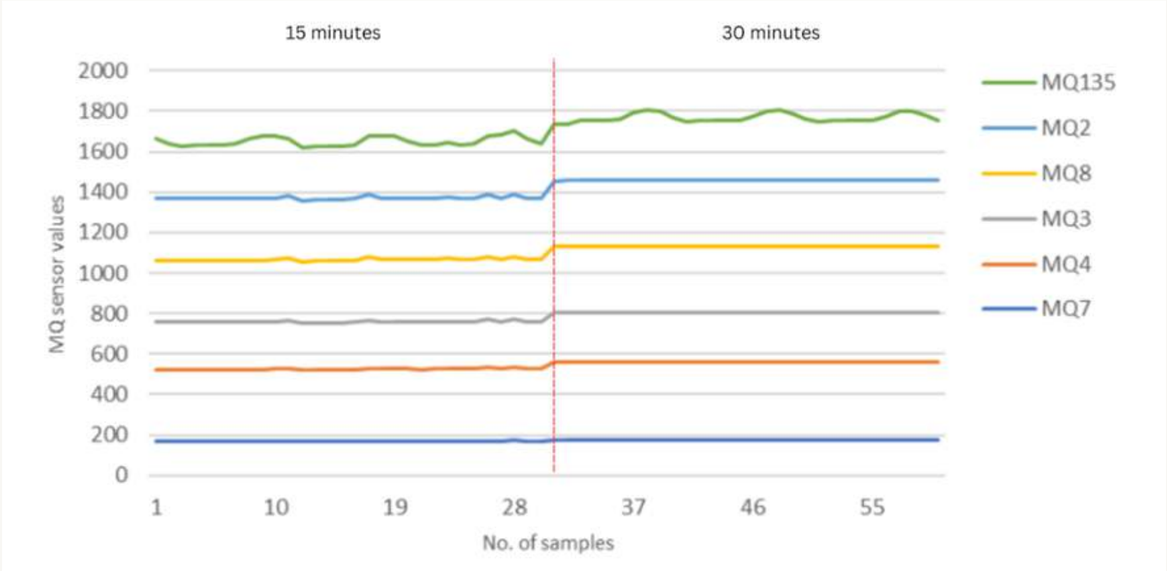
Justifying Method Choices: Preliminary results can provide evidence for why specific methods were chosen. For example, if initial tests showed that using a particular circuits can filter noises or a circuit can provide a better gain. This can be shown via simulations and/or experimental work

Providing Context: In some cases, preliminary results help set the stage for the main research by showing feasibility or initial findings that guided the design of experiments. This can be shown perhaps through output from software tutorials for example

Example 1 – Simulation of your circuit



Example 2 – Calibration of your sensors



- **So, in conclusion, a good documentation of methodology**
  - Should demonstrate a good framework of ideas and theoretical knowledge
  - Should clearly addresses the techniques and procedures in a well organized, clear and concise narrative.
  - Having preliminary result is a **bonus!**

CHAPTER 4 – RESULT AND ANALYSIS

Documenting Your Results and Analyze Your Data

OVERVIEW OF YOUR CHAPTER

An overview is to inform the readers on the flow or the summary of your chapter.

Example 1

This chapter presents the results from simulations conducted using the MATLAB Classification Learner App. Two simulations are explored: one using clean data and the other is by incorporating noise into the dataset. The purpose of this dual approach is to assess the stability and robustness of the chosen machine learning algorithms—Support Vector Machines (SVM), K-Nearest Neighbors (KNN), and Artificial Neural Networks (ANN).

The clean data simulation serves as a baseline to evaluate the performance of the algorithms, while the noisy data simulation provides insights into how well the models handle real-world scenarios. Additionally, the chapter offers a comprehensive analysis of the trained models, examining key evaluation metrics such as accuracy, precision, recall, and other relevant performance indicators.

Example 2

To determine the optimal design of a SAW sensor in detecting acetone, benzene, and toluene, two SAW sensor models with different sensing films were simulated. The concentrations of these VOCs were chosen based on their levels in cigarette smoke. Acetone concentrations ranged from 50 ppm to 550 ppm, while benzene and toluene concentrations were between 10 ppm to 60 ppm and 5 ppm to 80 ppm, respectively. Key parameters such as the shifted resonant frequency, sensitivity, and change in shifted resonant frequency were calculated. By the end of this chapter, the optimal SAW sensor configuration for detecting acetone, benzene, and toluene is selected.

PRESENTING YOUR RESULTS

Present raw data, findings, or outcomes of the project. Use tables, graphs, charts, or figures to clearly display the results.

For quantitative projects: This may include numerical data, statistics, or other measurable outcomes.

For qualitative projects: It might include themes, patterns, or insights gathered from interviews, observations, or case studies.

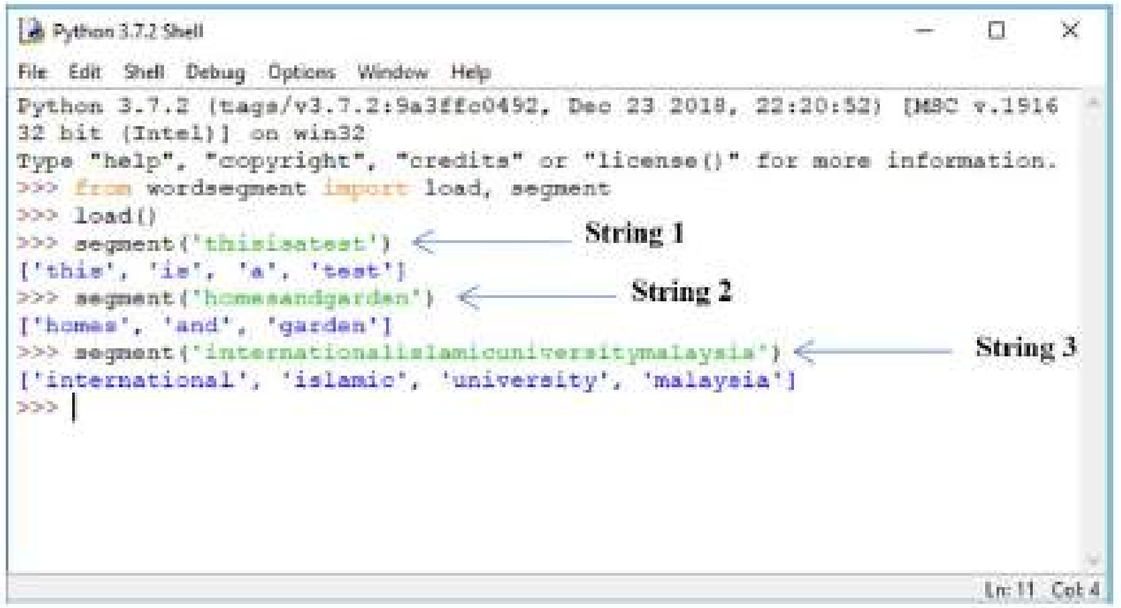
```
if(distance<50):
        GPIO.output(led, GPIO.HIGH)
        doc_ref.update({
              u'status': u'IN'
        })
 else:
        GPIO.output(led, GPIO.LOW)
        doc_ref.update({
              u'status': u'OUT'
        })
```

LED ON

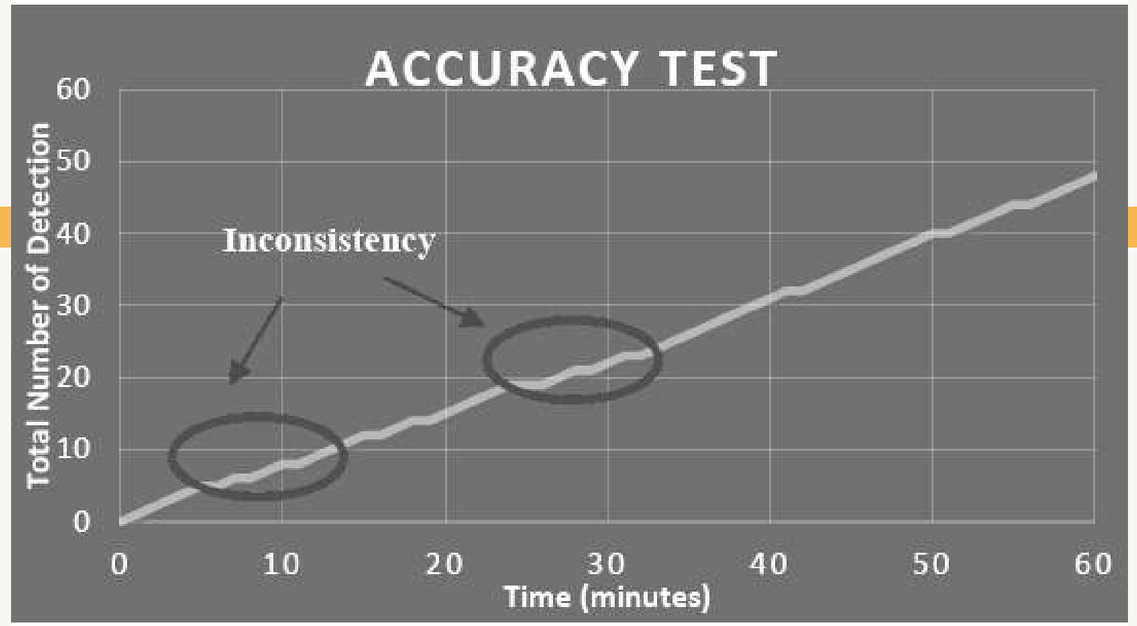
Less than 50 cm

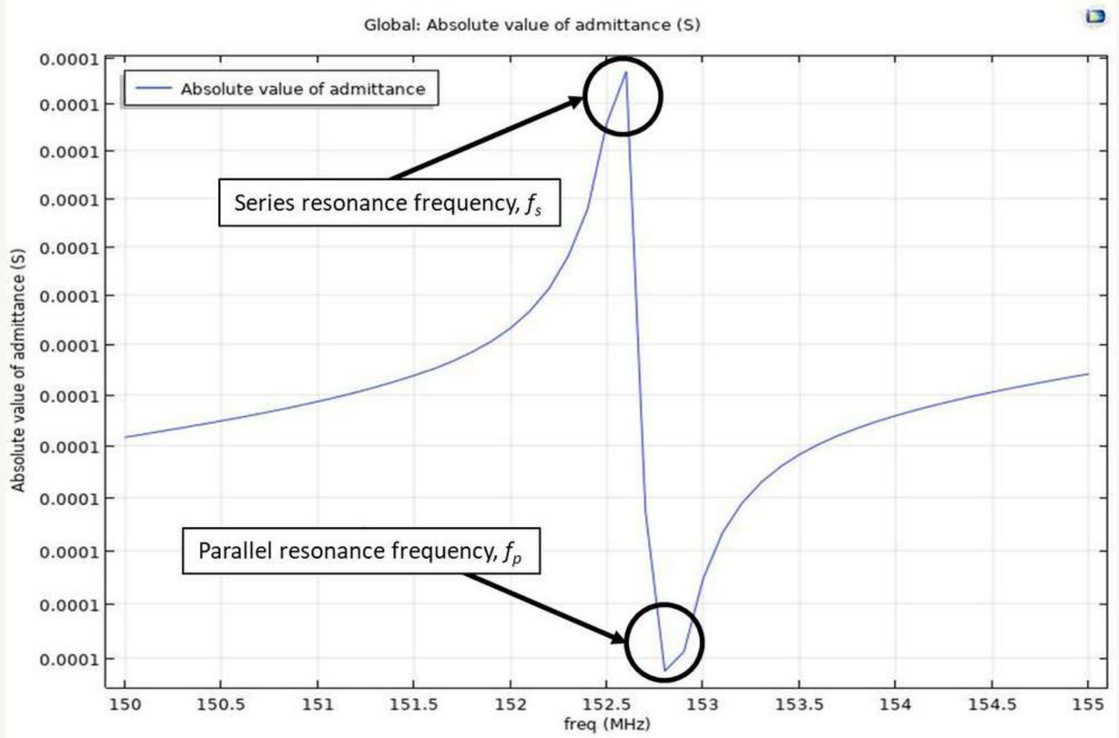
LED OFF

More than 50 cm



Put labels in your coding - to allow examiners to understand your work





Put labels on your graph to indicate changes or detection

IMPORTANT: Don't forget to label your x and y axis

EXPLAIN AND ANALYZE YOUR RESULTS

Explaining and analyzing your results is one of the most critical sections. It demonstrates your ability to:

- **Interpret Data:** Show that you can understand and draw meaningful conclusions from the results you've obtained, whether they are experimental, theoretical, or computational.
- **Link to Objectives:** Relate your results back to the original aims and objectives of the project. Did you achieve what you set out to do? If not, explain why.
- **Provide Insights:** Go beyond simply presenting the results; discuss what they mean in the context of your field. How do they compare to existing work or theories?

- **Identify Patterns or Anomalies:** Highlight any trends or unexpected outcomes, and attempt to explain why they might have occurred.

- **Critical Analysis:** Be able to critically evaluate the strengths and limitations of your approach and the quality of the results.

- **Propose Future Work:** Suggest improvements or further research that could build on your findings.

STRUCTURE OF A GOOD ANALYSIS

Clear Restatement of Results

- “The experiment yielded a 25% increase in efficiency compared to the baseline, as shown in Table 2.”

- “As can be seen from all these figures, there is a significant change in the frequency shift between thickness of 400 nm and 500 nm”

Connection to Objectives:

- “This 25% improvement supports the theory that implementing the X algorithm would lead to enhanced system performance”

- “The 15% increase in energy output observed in our trials demonstrates that the algorithm successfully achieves this objective”

Comparison with Existing Literature:

“Our results align with the findings of Smith et al. (2019), who reported similar improvements in efficiency using a comparable method. However, unlike Smith et al., we observed a further decrease in computational load, which may be attributed to our enhanced hardware setup”

Explanation of Anomalies or Unexpected Results:

“Contrary to our initial expectations, the system showed a drop in performance after exceeding 500 iterations. This may be due to memory constraints or algorithmic bottlenecks, which will need further investigation”

Critical Thinking & Limitations:

“One limitation of this study is the small dataset size, which may have introduced some distortion in the presented results. Future work could involve a larger, more varied dataset in order to produce a more generalize outcome”

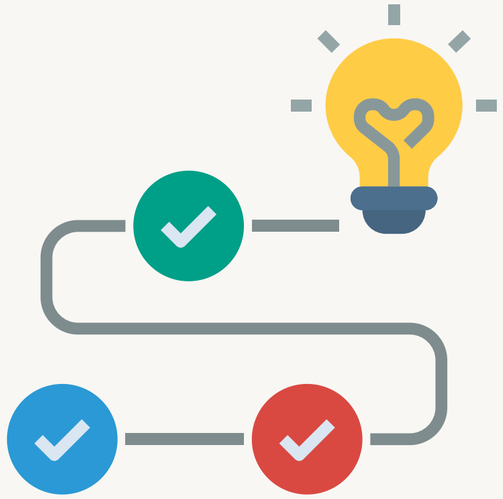
REMEMBER

BE SPECIFIC - Don’t be vague. ‘The results are shown in Figure xx’ but there is no explanation and analysis

USE VISUALS - Tables and graphs are good ways to visualize and present your results

STAY BALANCED - Acknowledge both strengths and weaknesses in your results

- **So, in conclusion, a good documentation of results and analysis**
  - Should demonstrate a clear presentation of results
  - Should clearly highlight trends, correlations, or significant observations
  - Should demonstrate connections with the objectives of your project



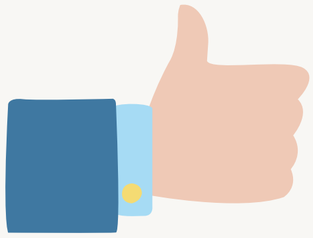
CHAPTER 5 – CONCLUSION AND FUTURE WORK

SAMPLE STRUCTURE FOR A CONCLUSION CHAPTER

Introduction/Restate Objectives:

- “This project set out to achieve two key objectives: to design a system for X and to evaluate its performance under Y conditions”

- “The primary objective of this study was to develop an algorithm that increases system efficiency by at least 10% under varying conditions”

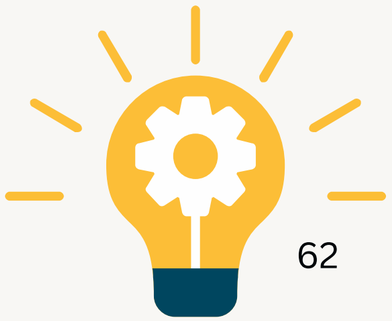


By **linking back to the objectives**, it shows that the research is coherent and has followed through from start to finish.

Summary of Key Findings:

- “The results indicate that the system successfully reduced processing time by 20%, meeting the initial objective. Additionally, it demonstrated robustness in handling larger datasets, showing a clear improvement over traditional methods”

- “The results indicate that the Support Vector Machine (SVM) model has shown a high degree of accuracy of 100% and 99% for the unripe, and overripe respectively but only 73% of accuracy for the ripe classifications.”



Address the Limitations:

- "Despite the promising results, this study was limited by the small dataset size, which may affect the generalizability of the findings. Future work should address this limitation by testing the algorithm on larger datasets"

- “It is important to note that the designed circuit can only operate at frequency between 1 kHz to 3 kHz”

Future Work:

- "Further research could explore applying the algorithm to real-time systems and integrating additional features to enhance its scalability and efficiency."

- “One of the plan for future improvement of this work it to enhance the amount of data sampling and incorporate a wider spectrum of sensors to significantly improve the system's accuracy and dependability”

- **So, in summary, a good conclusion chapter**
  - Should reinstate the objectives of the project
  - Should summarize the key findings and how they are link to the objectives
  - Should propose some future work and recommendations

e ISBN 978-629-94005-0-9