HA NOI UNIVERSITY OF SCIENCE AND TECHNOLOGY
SCHOOL OF MECHANICAL ENGINEERING

Title of Your Capstone Project

Bachelor of Science in Mechatronics Engineering

by

Ngo Xuan Phong 20200461
Second Author 243014000
Third Author 243014000

Under the supervision of

Supervisor's Name: yyyy

September, 2023

DECLARATION OF AUTHORSHIP

Project Title	Title of Your Capstone Project
Authors	*Ngo Xuan Phong*, *Second Author*, and *Third Author*
Supervisor	Supervisor's Name: yyyy

We, *Ngo Xuan Phong*, *Second Author*, and *Third Author*, hereby declare that this capstone project titled *Title of Your Capstone Project* is entirely our own work, unless otherwise referenced or acknowledged. The content of this project is the result of our own research and efforts, and we have complied with all ethical guidelines and academic standards.

We are aware of the consequences of academic dishonesty and understand that any violation of ethical standards in this project may lead to disciplinary actions as defined by Ha Noi University of Science and Technology's policies.

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Hanoi, September, 2023

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CERTIFICATE

This is to certify that the entitled **Title of Your Capstone Project**, submitted by **Ngo Xuan Phong** (Student ID: 20200461), **Second Author** (Student ID: 243014000) and **Third Author** (Student ID: 243014000) are undergraduate students of the **College of School of Mechanical Engineering** has been examined. Upon recommendation by the examination committee, we hereby accord our approval of it as the presented work and submitted report fulfill the requirements for its acceptance in partial fulfillment for the degree of *Bachelor of Science in Mechatronics Engineering*.

The Committee

Chair
Full-name

Member
Full-name

Member
Full-name

Hanoi, September, 2023

ACKNOWLEDGEMENTS

I would like to extend my sincere thanks to .....

I would like to thank .....

I was lucky to meet many .....

Finally, I would like to thank my family and friends .....

Hanoi, September, 2023

Ngo Xuan Phong, *Second Author* and *Third Author*

Dedicated to
abc

– *Ngo Xuan Phong*

To my girl ...
pqr

– *Second Author*

To
xyz
a good soul.

– *Third Author*

ABSTRACT

Write the abstract here.

Keywords: Artificial Intelligence, Internet of Things (IoT). (write in alphabet order)

ABBREVIATIONS

AWGN	Additive White Gaussian Noise
BPSK	Binary Phase Shift Keying
MMSE	Minimum Mean Square Error

Contents

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Chapter 1

INTRODUCTION

Chapter 1 should provide a clear statement of the problem posed by the project, and why the problem is of interest. It should reflect the scenario, if available. The introduction also needs to present background information so that the reader can understand the significance of the problem.

1.1 Project Background

- Provide literature review: With the aim to provide an overview of relevant research, studies, and theories related to the problem or topic addressed in the project.
- Relevance and Importance: Why the problem is of interest and importance now; Who will use your proposed solution; State the potential impact of your project results.
- Current State and Limitations: Describe the current situation or existing solutions and their shortcomings.
- Transition: Conclude by bridging into the project definition and/or objectives.

1.2 Project Definition

Define the problem in terms of the technical details and features that the product, service, or process should have. These details are often set by your advisors to make sure the project is challenging and appropriate for a Capstone project. Here's how to break it down:

1.2.1 Problem Statement

State the problem in a single sentence or a brief paragraph.

1.2.2 Context and Scope

Define the scope of the problem—what aspects it encompasses and what it does not cover.

1.2.3 Significance and Implications

Explain why solving this problem is important. What are the potential consequences of not addressing it?

1.2.4 Quantification (if any)

If possible, quantify the problem to demonstrate its magnitude. This could involve presenting relevant statistics, data, or trends.

Remember to keep the definition of the problem concise, focused, and aligned with the goals of your Capstone project. It should be easy to understand and provide a clear sense of direction for the rest of the proposal.

1.3 Project Objectives

The objectives of a Capstone project outline the specific goals and outcomes you and your team aim to achieve through the project. These objectives guide your team and provide a clear focus. When writing the objectives section, make sure they are **specific, measurable, achievable, relevant, and time-bound (SMART)**. An example is given below:

- **Objective 1**: [Title]
  - State the first objective in clear terms.
  - Describe what you plan to achieve with this objective.
  - Make it specific and measurable.

$$E = MC^2 \tag{1.1}$$

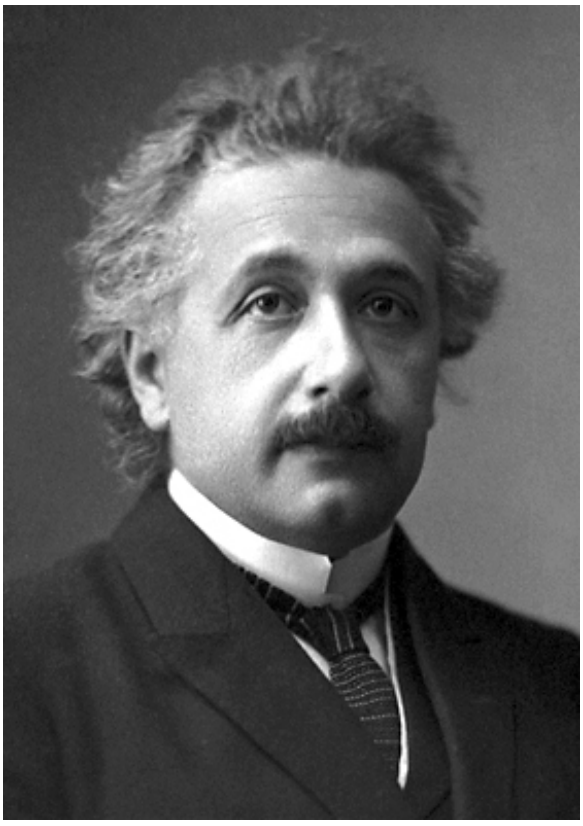

Figure 1.1: Albert Einstein is widely regarded as a genius.

1.4 Project Specifications

Given the project objectives above, you are asked to provide the detailed technical requirements, features, and characteristics that your project must adhere to in order to meet its objectives. These include technical needs, performance expectations, design elements, functionalities, compatibility, and security measures. Specifications guide the project's development, ensuring it meets its objectives effectively and aligns with established criteria. [1, 2, 3].

Chapter 2

PROJECT MANAGEMENT

Chapter 2 will assess the ability to work as a team from planning, dividing work, monitoring progress and making decisions.

2.1 Project Plan

This plan outlines the project's timeline, tasks, responsibilities, and milestones. It demonstrates how you've organized and structured the project to achieve its objectives.

2.2 Contribution of Team Members

- Highlight the individual contributions of each team member.
- Discuss how each person's skills, expertise, and responsibilities contribute to the project's success.
- This section showcases teamwork and collaboration.

2.3 Challenges and Decision Making

Discuss any challenges or unexpected issues that arise during the project. Explain how your team addresses these challenges and how decisions are made. Highlight the decision-making process and how it impacts project outcomes.

Chapter 3

SYSTEM DESCRIPTION

The purpose of the Chapter 3 is to describe the process of designing your project. The detail should be sufficient so that the reader can easily understand what was done. A brief summary of the unique approach your group used to solve the problem should be given, also including a concise introduction to theory or concepts used to analyze and calculate. To improve clarity of presentation, this section may be further divided into subsections as below:

3.1 Block Diagram of the System

- Present an overview of the system's architecture through a block diagram. Each block should represent a key component or module of your project
- Describe the purpose and functionality of each block, highlighting their relationships and interactions.

3.2 Design of Each Block and Select the Best Alternative

- Here, delve into the design details of each individual block from the block diagram. Discuss different design alternatives considered and the rationale behind selecting the final design.
- If any unique approaches were used, elaborate on them. Explain how each block's design contributes to the overall functionality of the system.

3.3 Testing of Each Block

- This subsection covers the comprehensive testing procedures conducted for each block.
- Please note that this subsection can be removed/modified depending on the specific project.

3.4 System Implementation

- Discuss the practical steps taken to translate the conceptual design into tangible components. Considerations for scalability, efficiency, and real-world implementation are detailed.

Chapter 4

SYSTEM TESTING AND ANALYSIS

Chapter 4 provides an overview of the implementation and testing phases of the proposed Capstone project. This chapter is dedicated to explaining how the project will be executed, the system will be tested, and the obtained results will be analyzed and discussed in the second semester. The following subsections guide the presentation of this information:

- Briefly provide the systematic approach used to conduct system testing (if prototype) amd simulating (if simulation). The testing phase aims to verify the functionality, reliability, and performance of the implemented solution.
- Briefly describe the different types of tests performed, including unit testing, integration testing, and user acceptance testing.

Col1	Col2	Col2	Col3
1	6	87837	787
2	7	78	5415
3	545	778	7507
4	545	18744	7560
5	88	788	6344

Table 4.1: Your caption.

Chapter 5

CONCLUSION AND RECOMMENDATION

Chapter 5 should summarize the key findings and outcomes of your Capstone proposal project. This section serves to highlight the achievements, discuss the implications of your work, and offer recommendations for future steps. The following subsections guide the presentation of this information:

5.1 Conclusion

- Reiterate the problem addressed, the objectives achieved, and the impact of our proposed solution.
- By reflecting on the significance of the proposal, you can emphasize the contributions made to the field and the potential benefits to stakeholders.

5.2 Future Recommendation

- Provide recommendations for future steps based on your proposal's outcomes.
- Identify areas where further refinement, expansion, or exploration will be warranted. These recommendations provide valuable guidance for subsequent stages of the project or for other researchers interested in building upon our work.

APPENDIX

REFERENCES

[1] D. Tse and P. Viswanath. *Fundamentals of Wireless Communication.* Cambridge Univ. Press, UK, 2005.

[2] Sumudu Samarakoon et al. Backhaul-aware interference management in the uplink of wireless small cell networks. *IEEE Trans. Wireless Commun.*, 12(11):5813–5825, 2013.

[3] P. Key, L. Massoulie, and D. Towsley. Path selection and multipath congestion control. In *IEEE Conf. Comput. Commun. (IEEE INFO- COM)*, pages 143–151, 2007.

Please use the following page format for the cover of your report.

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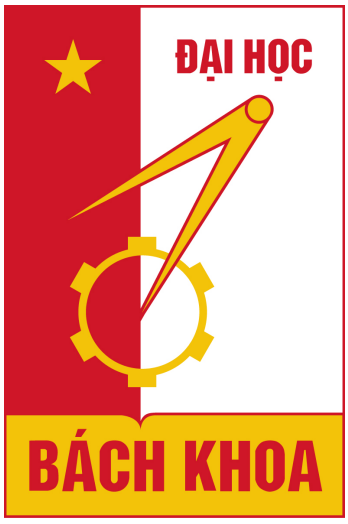

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