THESIS TITLE

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MISS FIRSTNAME2	**LASTNAME2**
MR.FIRSTNAME3	**LASTNAME3**

**A PROJECT REPORT SUBMITTED IN PARTIAL
FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE
BACHELOR OF ENGINEERING IN COMPUTER ENGINEERING**

**FACULTY OF ENGINEERING & INTERNATIONAL COLLEGE
MAHIDOL UNIVERSITY
2023**

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2023

Computer Engineering Project
entitled
THESIS TITLE

_____
Mr.Firstname1 LastName1
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Miss FirstName2 LastName2
Researcher

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Mr.FirstName3 LastName3
Researcher

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Dr. AdvName AdvLastname, Ph.D. (Data Science),
Ph.D. (Computer Engineering)
Advisor

Thesis
entitled
THESIS TITLE

was submitted to the Faculty of Engineering & International College,
Mahidol University
for the degree of Bachelor of Engineering (Computer Engineering)
on
July 15, 2024

_____

Dr. AdvName AdvLastname, Ph.D. (Data Science),
Ph.D. (Computer Engineering)
Chair Committee

_____

Committee 1, Ph.D. (Computer Engineering)
Committee

_____

Committee 2, Ph.D. (Computer Engineering)
Comittee

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ACKNOWLEDGEMENT

First and foremost, we would like to express our special thanks and sincere of gratitude to our advisor and co-advisors, Asst. Prof. XXX XXXX, Asst. Prof. YYY YYYY, Asst. Prof. ZZZ ZZZZ, who insight, advise and knowledge us a lot in finalizing this project within the limited time frame.

Beside our advisors, we would like to thank to the committees, Asst. Prof. XXX XXXX, Asst. Prof. YYY YYYY, and Asst. Prof. ZZZ ZZZZ, for their insightful comment and encouragement. Also, the questions which encourage us to rethink and research more about some factors which we missed. Therefore, this project would not be completed without comments, questions, and support from our committees.

Finally, we would like to special thanks to our university, Mahidol University International College, and Faculty of Engineering, Mahidol University, which provided us a lot of resources to study, financial means for researching this project.

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บทคัดย่อ

บทคัดย่อภาษาไทย (not required for your project proposal, but it is mandatory for the black book)

คำสำคัญ : ลาเท็ก / วิทยานิพนธ์ (~5 คำ)

9 หน้า

THESIS TITLE

STUDENTS   Mr. Firstname1   LastName1 ICCI

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DEGREE   Bachelor of Engineering (Computer Engineering)

PROJECT ADVISOR   Dr. AdvName AdvLastname, Ph.D. (Data Science),

                     Ph.D. (Computer Engineering)

DATE OF GRADUATION   July 15, 2024

ABSTRACT

An abstract (250-400 words) should provide a concise summary of your entire thesis. It should report significant elements of your thesis including background or introduction in brief, objectives, statistical data, key findings, and conclusion. Mathematical formulas, diagrams, and other illustrativematerials are not recommended for inclusion. A strong abstract should be self-contained; without abbreviations, footnotes, references. Outside readers typically view the abstract before deciding to read the thesis, so it should be well written, logical, and a complete reflection on you work. The abstract is typically written last after finishing chapter 4 and 5.

KEYWORDS : LaTeX / Thesis (~5 words)

9 Pages

CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1
INTRODUCTION

1.1 Background

Background should precisely tells the readers why your project/research is important. It may also include essential information of your project/research topic.

What is the problem you are trying to address, or why does it matter?. What is already known about your topic. A completed outline of your literature review. All related previous works with appropriate citations/references)

What are the gaps that your project/research/study/ addresses. Only focus on the gaps that your work can address. End this part with your Research Questions / Contributions/ Objectives

1.2 Objective

(Must use action verbs)

1. To develop …
2. To identify …
3. To increase/improve ...
4. To reduce/mitigate …

1.3 Scope

1. What you do or do not consider in this project.
2. What you cannnot do or exclude from this project.
3. Limitations
4. Ranges of data, date, and time
5. Platform(s)/Device(s) used specifically in this prohect

1.4 Expected Results

(Indicate expected outcomes of the project)

1. The proposed XXX system/algorithm

2. The proposed system/algorithm can identify/solve …

3. The accuracy increases/reduces up to … %

1.5 Timeline

Table 1.1 Project Timeline

Plan	Timeline											
	2023									2024		
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
1: Task 1	■											
2: Task 2		■										
3: Task 3			■	■								
4: Task 4					■							
5: Task 5						■	■	■	■			
6: Task 6									■	■		
7: Task 7										■	■	
8: Task 8												■

CHAPTER 2
LITERATURE REVIEW

Provide a brief description of what this chapter covers. It is typically an outline of a comprehensive literature review for the whole project. All related papers and previous works should be reviewed.

2.1 Comparison of Deep Learning and the Classical Machine Learning Algorithm for the Malware Detection [1]

This paper proposed a malware-detection comparison between using Deep Neuron Network (DNN) and using Randon Forest (RF).

Four different feature sets of Malicia data are used for performance evaluation.

True positive Rate (TPR), True negative Rate (TNR), and Positive Predictive Value (PPV), including Precision and Accuracy (Acc.) were caculated and used for performance comparison.

The experiment indicated that RF performs better that DNN. This may be due to the combination of Auto-Endocoders used for feature extraction and DNN used for feature classification , which is too complex to predict malware using opcode frequency as a feature.

The future work is the investigaion of using other machine learning techniques such as RNN, LSTM, and ESN with more advanced feature extraction approaches.

2.2 Android Malware Detection Using Static Features and Machine Learning [2]

This paper proposed a static feature-based machine learning approach for android malware detection.

A combinatoon of various static features such as opcode, permissions, and API calls of Android Application Pakage (APK) were used and compared with using a single type of APK.

Several machine lerning technies included Linear Classifier, oosted Trees, Gaussian Naive Bayes, Decision Tree, Random Fores (RF), and Support Vector Machine (SVM) were used for malware detection and comparison.

In this work, data set used were collected from 1) Andriod Malware Dataset (AMD), 2) Kuafu Det Dataset, and Omnidroid Dataset were used. 60% of them were used for training, and the remaning is for performance testing in terms of True Positive (TP), False Positive (FP), True Negative (TN), and False Negative (FN).

The experiment showed that Gaussin Process, RF, and Decision Tress provided the most promissing results, respectively.

The future work is to apply dynamic feature extracted from APK files to filter out clssiified malware as benign. In addtion, more advanced machine learning methods such as Deep Neuron Network will also be used with better feature selection approaches to exclude redundant and unnecessary featurwes .
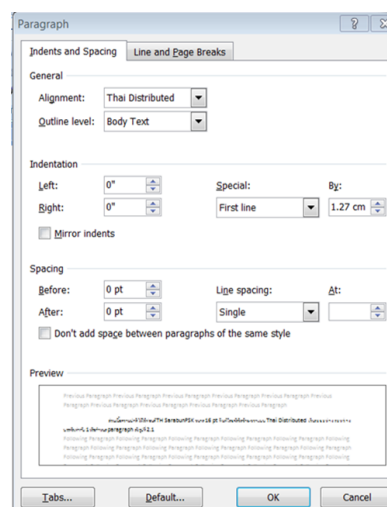
CHAPTER 3

METHODOLOGY

Describe what you did so that others can follow to recreate your work/system/ experiment proposed in this project. You should provide addiquet details about your work, system, algorithm, or design. This includes technical methods used (e.g., machine learning techniques, library, tools), data collection and preparation/pre-Processing, hyperparameter configurations, measurements, evaluation approaches or techniques used to evaluate your work performance. (It is recommended to writing this chapter after completing CH2 Literature Review)

3.1 System Design

You may start with an overview of your system/algorithm design by using the followings:

- Flowchart
- System, Design, or Block Diagram
- Phedu Code
- Others (figures or even tables)

Figure 3.1 Paragraph arrangement (example)

3.2 Data

3.3 Methods

3.4 Hyperparameter Configurations

3.5 Performace Evaluation

CHAPTER 4
RESULT

This chapter reports your experiment results or study report proposed in previous chapter. It typically consists of 1) Results in terms of tables or figures and 2) explanation or discussion of your results, study, or key findings.

4.1 Results

(Experiment/Results in the forms ofrtables or/and figures)

4.2 Discussions

(Interpretation or the meaning of your experiment/results)

CHAPTER 5
CONCLUSION

This chapter summarizes all of your work. It typically starts with the brief explanation of of what you do such as the objective of your work, design, data, experiment results, key findings, interpretation of your experiment and/or result. The obstacles of your work can also be discussed and finally followed by future work.

5.1 Conclusion

...

5.2 Obstacles

...

5.3 Future Work

...

REFERENCES

[1] M. Sewak, S. K. Sahay, and H. Rathore. Comparison of deep learning and the classical machine learning algorithm for the malware detection. *2018 19th IEEE/ACIS International Conference on Software Engineering, Artificial Intelligence, Networking and Parallel/Distributed Computing (SNPD)*, pages 293--296, 2018. doi: 10.1109/SNPD.2018.8441123.

[2] A. A. Zaabi and D. Mouheb. Android malware detection using static features and machine learning. *2020 International Conference on Communications, Computing, Cybersecurity, and Informatics (CCCI)*, page 1–5, 2020. doi: 10.1109/CCCI49893.2020.9256450.