**MINISTRY OF EDUCATION AND TRAINING**

**HUNG YEN UNIVERSITY OF TECHNOLOGY AND EDUCATION**

****

**FINAL PROJECT**

**DEEP LEARNING**

**TENNIS COURT KEYPOINTS DETECTION**

MAJOR: COMPUTER SCIENCE

STUDENT: **VU QUANG PHUC**

CLASS: **124221KS**

SUPERVISOR: **Associate Prof, PhD NGUYEN MINH TIEN**

**HUNG YEN – 2025**

**COMMENTS**

**Comments from supervisor:**

**SUPERVISOR**

**(**Signature and Full Name)

**Nguyen Minh Tien**

# COMMITMENT

I solemnly declare that the project for the Deep Learning course, titled “Tennis Court Keypoints Detection” is the result of my independent work.

All references and sources used in the project are appropriately cited in the References section. The findings and analyses presented in the project are entirely my own.

I accept full accountability for any discrepancies or violations of this declaration, as per the regulations of the faculty and the university.

*Hung Yen ................. ......., ...........*

Student

# ACKNOWLEDGEMENT

Completing this project, “Tennis Court Keypoints Detection” has been a challenging yet rewarding journey, and it would not have been possible without the invaluable guidance and support I have received along the way

First and foremost, I would like to express my deepest gratitude to the Department of Computer Science, Faculty of Information Technology – Hung Yen University of Technical Education. The resources, academic environment, and opportunities provided by the department have been instrumental in enabling me to carry out this project. I feel incredibly fortunate to have been part of a program that prioritizes academic excellence and hands-on learning.

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I acknowledge that, despite my best efforts, there may still be areas for improvement in this work. I warmly welcome constructive criticism and feedback from my professors, as I believe that every critique is an opportunity for growth.

Thank you for your encouragement and support throughout this journey!

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# GLOSSARY OF TERMS

|  |  |  |  |
| --- | --- | --- | --- |
| Index | Term | Full form | Meaning |
| 1 | CNN | Convolutional Neural Network |  |
| 2 | DL | Deep Learning |  |
| 3 | SGD | Stochastic Gradient Descent |  |
| 4 | RMSE | Root Mean Square Error |  |
| 5 | PCK | Percentage of Correct Keypoints |  |
| 6 | ResNet | Residual Network |  |
|  |  |  |  |
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# GENERAL INTRODUCTION

## Love

## Fsdfsd

## Fsddfsd

## Fsdfsdf

## Sfsdfs

## d

# THEORICAL BACKGROUND

## love

## fsdf

## fsfs

## fsfs

## fsdfs

## fsddfsf

## 

# SYSTEM ANALYSIS AND DESIGN

## what

## Thư Fuck is this

## 

## Fsdfsd

## Fsdfsd

## Fsdfsf

## Sdfdsd

## Fsdfs

# SYSTEM ANALYSIS AND DESIGN

## What

## Thư

## Fuck

## Is thí

## 

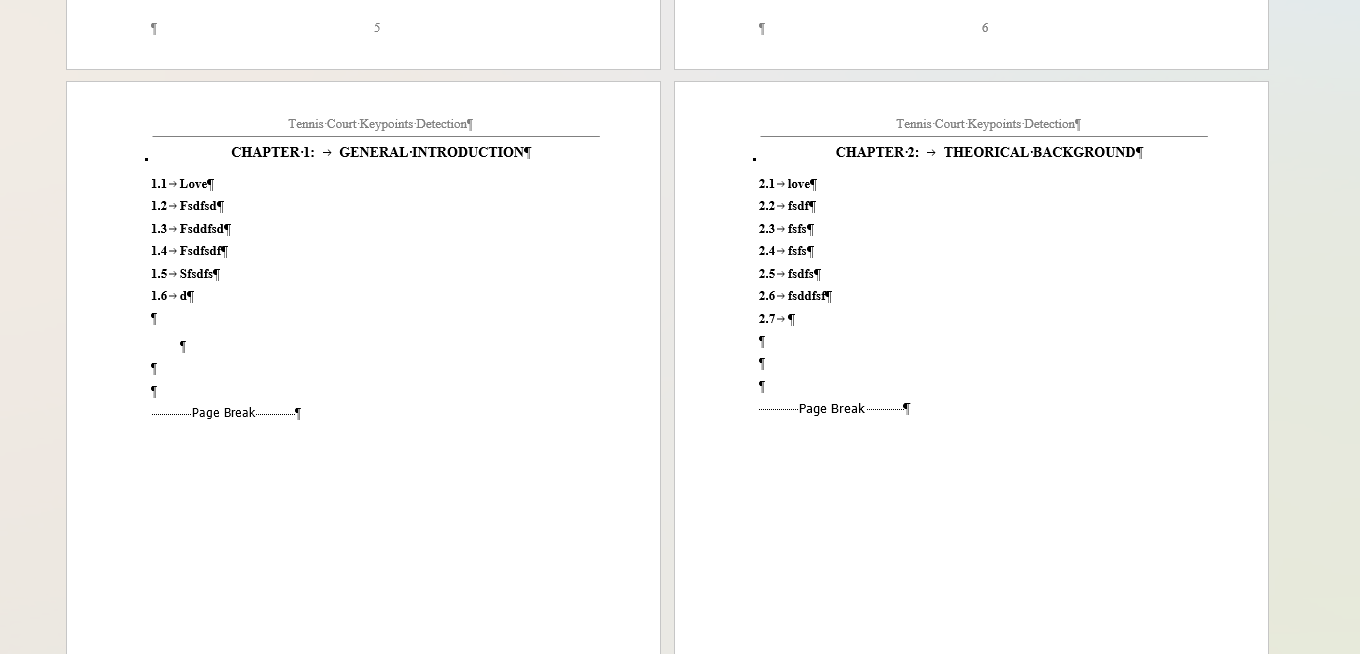


Figure 4.1 : What the fuck

# CONCLUSION

1. **Achievements:**

* The project has significantly improved the early detection and prediction of **Weaknesses:**
* Data Limitations: The quality and availability of data remain a challenge,
* populations or regions, leading to concerns about their generalizability.

1. **Future Enhancement:**

* Data Enhancement: Efforts should be made to acquire and integrate diverse datasets, including genetic data, biomarkers, and longitudinal studies, to improve

# REFERENCES

|  |  |
| --- | --- |
| [1] | Dataset link: *https://www.kaggle.com/datasets/rabieelkharoua/alzheimers-disease-dataset/data* |
| [2] | Documents and slides of mentor Nguyen Van Quye |
| [3] | Documents and slides of mentor Nguyen Van Quyet |