UNDERGRADUATE THESIS

LUNG CANCER CLASSIFICATION USING THE SHIFTED WINDOW TRANSFORMER (SWIN TRANSFORMER) BASED ON HISTOPATHOLOGICAL IMAGES

DIMAS AJI PRIMADIANSYAH
NPM 22081010306

THESIS ADVISORS
Dr. Rr. Ani Dijah Rahajoe, S.T., M.Cs.
Yisti Vita Via, S.ST., M.Kom.

MINISTRY OF HIGHER EDUCATION, SCIENCE, AND TECHNOLOGY
UNIVERSITAS PEMBANGUNAN NASIONAL VETERAN JAWA TIMUR
FACULTY OF COMPUTER SCIENCE
INFORMATICS STUDY PROGRAM
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APPROVAL SHEET

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By:
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NPM. 22081010306

Has been defended before, and accepted by, the Board of Assessors of the Thesis Examination of the Informatics Study Program, Faculty of Computer Science, Universitas Pembangunan Nasional Veteran Jawa Timur, on July 10, 2026:

Approved,

Dr. Rr. Ani Dijah Rahajoe, S.T., M.Cs.
NIP. 19730512 200501 2 003 ..... **(Advisor I)**

Yisti Vita Via, S.ST., M.Kom.
NIP. 19860425 202121 2 001 ..... **(Advisor II)**

Dr. Budi Nugroho, S.Kom. M.Kom.
NIP. 19800907 202121 1 005 ..... **(Head Assessor)**

Ardhon Rakhmadi, S.Tr.T., M.Kom.
NIP. 19910805 202406 1 002 ..... **(Assessor I)**

Acknowledge by,

Dean of the Faculty of Computer Science

Prof. Dr. Ir. Novirina Hendrasarie, M.T.
NIP. 19681126 199403 2 001

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By:
DIMAS AJI PRIMADIANSYAH
NPM. 22081010306

Approved to proceed to the Thesis Examination

Approved by,

Coordinator of Informatics Study Program
Faculty of Computer Science

Dr. Intan Yuniar Purbasari, S.Kom. MSc.

NIP. 19800602 202521 2 029

STATEMENT OF ORIGINALITY

I am the undersigned:

Student Name	:	Dimas Aji Primadiansyah
NPM	:	22081010306
Degree Program	:	Bachelor (S1)
Study Program	:	Informatics
Faculty	:	Faculty of Computer Science

Hereby declares that this undergraduate thesis contains no part of any other scientific work that has been submitted to obtain an academic degree at any higher education institution. Furthermore, it does not contain any work or opinions previously written or published by others, except for those which are explicitly cited in this thesis and listed completely in references.

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Surabaya, July 14, 2026
Declarant,

DIMAS AJI PRIMADIANSYAH
NPM. 22081010306

ABSTRACT

Student Name / NPM	:	Dimas Aji Primadiansyah / 22081010306
Thesis Title	:	Lung Cancer Classification Using the Shifted Window Transformer (Swin Transformer) Based on Histopathological Images
Advisor	:	1. Dr. Rr. Ani Dijah Rahajoe, S.T., M.Cs 2. Yisti Vita Via, S.ST., M.Kom

Lung cancer is one of the leading causes of cancer-related deaths worldwide, highlighting the need for a system that can assist the diagnostic process quickly and accurately. This study aims to implement the Shifted Windows Transformer (Swin Transformer) method for classifying lung cancer histopathological images using the LC25000 dataset, which consists of 15,000 images divided into three classes: Lung Adenocarcinoma, Lung Benign Tissue, and Lung Squamous Cell Carcinoma. The research stages include image preprocessing, hyperparameter tuning using Grid Search, model training, evaluation using accuracy, precision, recall, F1-score, confusion matrix, and ROC curve, as well as model deployment into a web-based application using Laravel as the frontend and Flask as the backend. The experimental results show that the Swin Transformer model achieved an accuracy of 98.13% on the testing dataset and 85.00% on blind testing using the LungHist700 dataset, outperforming both the Vision Transformer (ViT) and ResNet50 models. These findings demonstrate that the Swin Transformer is effective for lung cancer classification based on histopathological images and has the potential to serve as a computer-aided diagnostic support system.

Keywords : Lung Cancer, Histopathological Images, Swin Transformer, Classification, Deep Learning, Laravel, Flask.

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The author sincerely welcomes any constructive comments and suggestions for the improvement of this thesis. It is hoped that this work will contribute meaningfully to future research and provide valuable insights for its readers.

Surabaya, July 14th 2026

Author.

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