UNIVERSITAS
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THE COMPARISON OF EFFICIENTNETB0, RESNET50, AND INCEPTIONV3 ARCHITECTURES FOR SIGN LANGUAGE RECOGNITION

FINAL REPORT

CHRISTOPHER MARCO ANGELO
41521010106

INFORMATICS STUDY PROGRAM
FACULTY OF COMPUTER SCIENCE
UNIVERSITAS MERCU BUANA
JAKARTA
2025

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CHRISTOPHER MARCO ANGELO
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Submitted in partial fulfillment of the requirements for Bachelor degree

INFORMATICS STUDY PROGRAM
FACULTY OF COMPUTER SCIENCE
UNIVERSITAS MERCU BUANA
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DECLARATION OF ORIGINALITY

I, the undersigned below:

Name   : Christopher Marco Angelo
NIM   : 41521010106
Study Program   : Informatics
Thesis Title   : THE COMPARISON OF EFFICIENTNETB0, RESNET50, AND INCEPTIONV3 ARCHITECTURES FOR SIGN LANGUAGE RECOGNITION

I hereby declare that this thesis report is my own original work and is not a result of plagiarism. All sources, whether cited or referenced, have been properly acknowledged. Should any element of plagiarism be found in my thesis report, I am willing to accept any academic sanctions in accordance with the regulations of Universitas Mercu Buana.

Jakarta, 28 July 2025

Christopher Marco Angelo

APPROVAL PAGE

This undergraduate thesis report is submitted by:

Name : CHRISTOPHER MARCO ANGELO

NIM : 41523100100

Study Program : Informatics

Thesis title : THE COMPARISON OF EFFICIENTNETB0, RESNET50, AND INCEPTIONV3 ARCHITECTURES FOR SIGN LANGUAGE RECOGNITION

Has been successfully defended in an examination before the Board of Examiners and accepted as part of the requirements for obtaining a Bachelor's degree (Strata 1) in the Informatics Engineering Study Program, Faculty of Computer Science, Universitas Mercu Buana.

Approved by:

Supervisor	: Dr. Afiyati, S.Si., M.T.	( )
NIDN	: 0316106908	
Head Examiner	: Ilham Nugraha, S. Kom, M. Sc	( )
NIDN	: 0307098904	
Examiner 1	: Dr. Hadi Santoso, S.Kom., M.Kom.	( )
NIDN	: 0225067701	
Examiner 2	: Dr. Ir. Eliyani, M.Kom.	
NIDN	: 0321026901	

Jakarta, 28 July 2025
Acknowledged by,

Dean

Dr. Bambang Jokonowo, S.Si., MTI
NIDN : 0320037002

Head of Study Program

Dr. Hadi Santoso, S.Kom., M.Kom
NIDN : 0225067701

FOREWORD

Praise be to God Almighty, for all His grace and pleasure so that the author can complete the research proposal which is one of the requirements for graduation from the Bachelor's Degree Program (S1) in Informatics Engineering, Universitas Mercu Buana.

The author realizes that this research proposal is far from perfect, because true perfection belongs only to God Almighty. Therefore, constructive suggestions and input are always gladly received by the author. And thanks to the support, motivation, assistance, guidance, and prayers from many parties, the author would like to thank:

1. Mr. Prof. Dr. Andi Adriansyah, M.Eng. as the Rector of Universitas Mercu Buana.
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3. Dr. Hadi Santoso, S.Kom., M.Kom., as the Head of the Informatics Engineering Study Program at Mercu Buana University.
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5. My parents who always support and support me during my studies as a student at Mercubuana University.
6. All college friends who always share information and provide support in different forms.

Finally, the author hopes that God Almighty will repay the kindness and always shower grace, guidance, and long life to all of us, amen. Thank you.

Jakarta, 28 July 2025

Christopher Marco Angelo

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STATEMENT OF APPROVAL FOR FINAL PROJECT PUBLICATION FOR ACADEMIC PURPOSES

As a member of the academic community of Mercu Buana University, I, the undersigned, hereby state the following:

Name   :   CHRISTOPHER MARCO ANGELO

NIM   :   41521010106

Study Program   :   Informatics

Thesis Title   :   THE COMPARISON OF EFFICIENTNETB0, RESNET50, AND INCEPTIONV3 ARCHITECTURES FOR SIGN LANGUAGE RECOGNITION

In the interest of advancing scientific knowledge, I hereby grant and agree to give Universitas Mercu Buana a **Non-exclusive Royalty-Free Right** to my scientific work mentioned above, along with its related components (if necessary).

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This statement is made truthfully and with full awareness.

Jakarta, 28 July 2025
Signature,

Christopher Marco Angelo.

ABSTRACT

Name	:	CHRISTOPHER MARCO ANGELO
NIM	:	41521010106
Study Program	:	Informatics
Thesis Title	:	THE COMPARISON OF EFFICIENTNETB0, RESNET50, AND INCEPTIONV3 ARCHITECTURES FOR SIGN LANGUAGE RECOGNITION
Supervisor	:	Afiyati, Dr., S.Si, MT.

This study explores the application of Convolutional Neural Networks (CNN) in recognizing sign language through image processing techniques, with a specific focus on the EfficientNet architecture. Sign language is a vital mode of communication for the hearing impaired, yet it remains underutilized due to limited understanding and a lack of tools for translation. The research aims to develop an image recognition model that accurately interprets sign language gestures by leveraging CNNs, particularly the EfficientNet model, known for its computational efficiency and high performance. EfficientNet's scalable architecture enhances the model's ability to process images of hand signs, learning to identify and translate them into text with improved accuracy and reduced computational requirements. Experimental results demonstrate that EfficientNet outperforms traditional CNN architectures in distinguishing between a variety of sign language gestures, making this approach highly promising for real-time applications. This study contributes to the field of assistive technologies by potentially bridging communication barriers for the hearing impaired through an efficient and robust solution.

Keywords: Sign Language, Image Processing, CNN, EfficientNet.

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