

**SENTIMENT ANALYSIS OF THE AMIKOM WHATSAPP
CALLER CENTER CHATBOT USING LONG SHORT-TERM
MEMORY (LSTM)**

SKRIPSI

To fulfill one of the requirements of achieving a Bachelor's degree

S1 – Informatika



Written by

KEZAALA DODY ISLAM MOHAMMED

19.61.0154

To

**THE FACULTY OF INFORMATICS
UNIVERSITAS AMIKOM YOGYAKARTA
YOGYAKARTA**

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HALAMAN PERSETUJUAN

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yang disusun dan diajukan oleh

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pada tanggal 27-02-2026

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**SENTIMENT ANALYSIS OF THE AMIKOM WHATSAPP CALLER CENTER
CHATBOT USING LONG SHORT-TERM MEMORY (LSTM)**

Dosen Pembimbing : Windha Mega

1. Karya tulis ini adalah benar-benar **ASLI** dan **BELUM PERNAH** diajukan untuk mendapatkan gelar akademik, baik di Universitas AMIKOM Yogyakarta maupun di Perguruan Tinggi lainnya.
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Yogyakarta, <tanggal lulus ujian skripsi>

Yang Menyatakan,



Kezaala Dody Islam Mohammed

DEDICATION

All praise and gratitude belong to Allah SWT for His endless mercy, guidance, and blessings. Without His permission and kindness, the completion of this thesis would not have been possible. This work is a small milestone in my journey, and I would like to dedicate it with sincere appreciation to those who have supported me along the way:

- **My beloved parents**, whose love, patience, and sacrifices have shaped who I am today. Thank you for your constant prayers, encouragement, and for always standing by me throughout every step of my life.
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- **My close friends, Fadel and Abil** thanks for the laughter, support, and unforgettable moments we shared throughout this journey. Your presence made the challenges feel lighter and the successes more meaningful.

May this work be a small reflection of the gratitude I hold for all of you who have been part of my journey.

OPENING STATEMENT

All praise and gratitude are devoted to Allah SWT for His endless mercy, blessings, and guidance, which have allowed the author to complete this thesis. May peace and blessings always be upon the Prophet Muhammad SAW, who has brought guidance and inspiration to humanity.

This thesis, titled *"Sentiment Analysis Of Amikom Whatsapp Caller Center Chatbot Using The Long Short Term Memory' as a Learning Medium on the Impact of Bullying Among Students,"* is submitted as a requirement to obtain the Bachelor's degree (S1) in the Informatics Program at Universitas AMIKOM Yogyakarta.

The author realizes that this thesis could not have been completed without the support, guidance, and encouragement of many individuals. Therefore, the author would like to express sincere gratitude and appreciation to:

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Finally, I would like to express sincere gratitude to all parties who have directly or indirectly supported the completion of this thesis. I realize that this thesis is still far from perfect; therefore, constructive criticism and suggestions are greatly appreciated for the improvement of this work in the future. It is hoped that this thesis can provide benefits and contribute to the development of educational media, particularly in raising awareness about the impact of bullying among students. And lastly but not the list would likely also extend heartfelt thanks to family, friends, and everyone who has provided encouragement, motivation, and support throughout the process of completing this thesis.

Wasalam Alaikum Wr Wb

Yogyakarta, 26 June 2025

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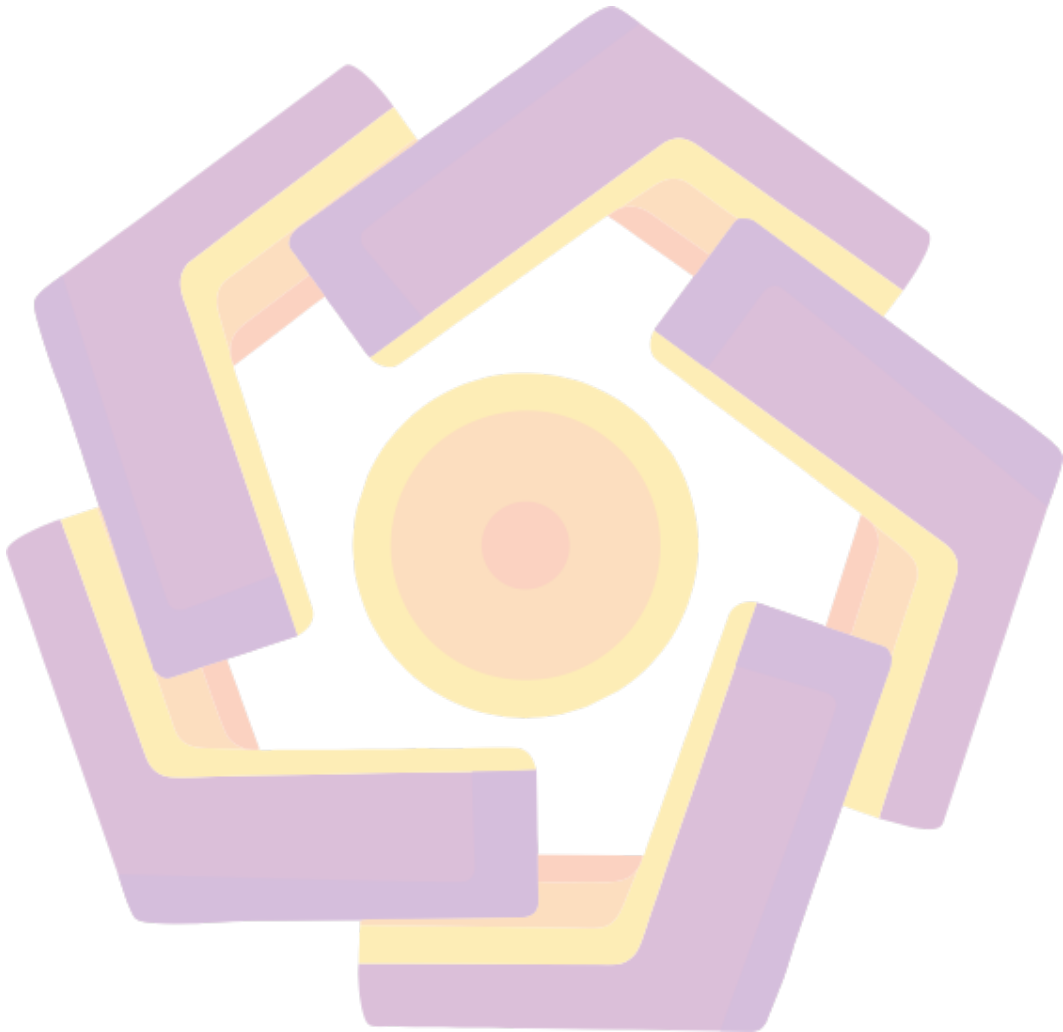
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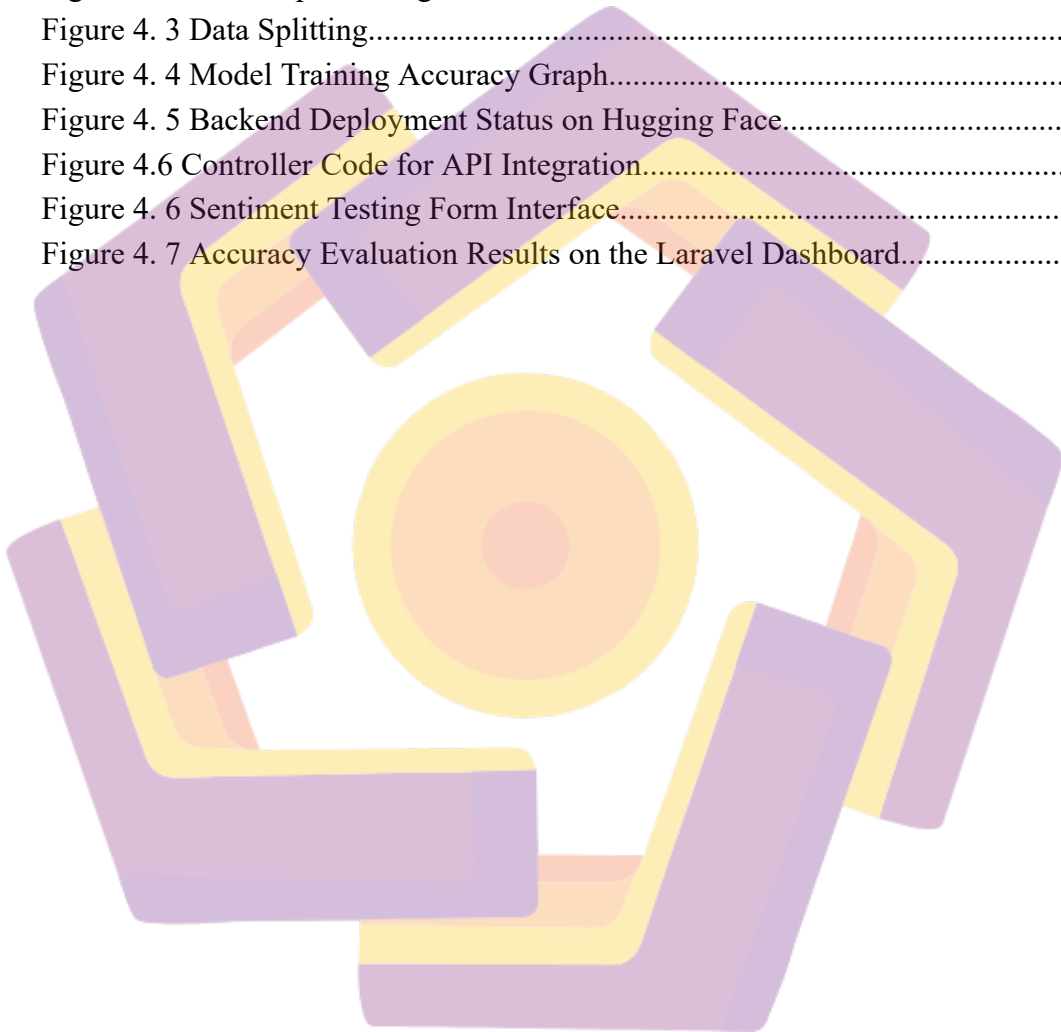
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DAFTAR LAMBANG DAN SINGKATAN

LSTM	: Long Short-Term Memory (LSTM)
NLP	: Natural Language Processing
AI	: Artificial Intelligence
API	: Application Programming Interface
Bi-LSTM	: Bidirectional Long Short-Term Memory
AJAX	: Asynchronous JavaScript And XML
WA	: Whatsapp



DAFTAR ISTILAH

WhatsApp Caller Center service : A customer support service based on WhatsApp.

Sentiment Analysis : A technique for classifying opinions expressed in text.

Chatbot : An automated program designed for chat-based interaction.

Natural Language Processing (NLP): A field of artificial intelligence that processes human language.

Bidirectional LSTM: A two-directional LSTM model used to understand contextual information.

Dataset: A collection of data used for training a model.

Data Preprocessing: The process of cleaning and preparing text data.

Tokenization: The process of splitting text into individual words or tokens.

Stopword: A common word that carries little semantic meaning.

Stemming: The process of reducing words to their root form.

Embedding Layer: A layer that represents words as numerical vectors.

Confusion Matrix: A table used to evaluate classification performance.

Accuracy: The percentage of correct predictions made by the model.

F1-Score: The harmonic mean of precision and recall.

API: An interface that enables communication between applications.

Flask: A lightweight Python framework for building APIs.

Deep Learning : A machine learning method based on neural networks.

INTISARI

Penelitian ini bertujuan untuk menganalisis sentimen chatbots Amikom yang digunakan oleh Whatsapp Caller Center dengan menggunakan metode Long Short-Term Memory (LSTM). Data yang digunakan adalah data sentimen yang terdiri dari pesan-pesan yang dikirim oleh pengguna kepada chatbots Amikom melalui layanan Whatsapp Caller Center. Metode LSTM dipilih karena mampu menangani data yang memiliki hubungan temporal yang kuat dan mampu memprediksi sentimen pengguna dengan akurasi yang tinggi. Hasil dari penelitian ini menunjukkan bahwa metode LSTM dapat digunakan untuk menganalisis sentimen chatbots Amikom dengan akurasi sebesar 96%.

Kata kunci: Analisis sentimen, Chatbots Amikom, Whatsapp Caller Center, Long Short-Term Memory (LSTM), Metode LSTM, Data sentimen, Akurasi prediksi sentimen

ABSTRACT

This study aims to analyze the sentiment of the Amikom chatbots used by the Whatsapp Caller Center using the Long Short-Term Memory (LSTM) method. The data used is sentiment data consisting of messages sent by users to Amikom chatbots via the Whatsapp Caller Center service. The LSTM method was chosen because it is able to handle data that has a strong temporal relationship and is able to predict user sentiment with high accuracy. The results of this study indicate that the LSTM method can be used to analyze the sentiments of Amikom chatbots with an accuracy of 96%.

Keyword: Sentiment analysis, Amikom Chatbots, Whatsapp Caller Center, Long Short-Term Memory (LSTM), LSTM Method, Sentiment data, Sentiment prediction accuracy