

# MUHAMMAD HATTA ABDILLAH

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Medan, Indonesia

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## PROFILE

A Computer Science graduate from the University of Sumatera Utara with foundation in **Software Development** and a specialization in **Artificial Intelligence (AI/ML)**. Experienced in building practical, full-stack applications, including a thesis project developing a biomedical chatbot with LLMs, LangChain, and a graph database. I excel at leveraging emerging technologies to create efficient and impactful solutions, combining both strong collaborative skills and a passion for continuous learning.

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## EDUCATION

University of Sumatera Utara (USU) – Medan, Indonesia	Aug, 2021 – Jul, 2025
<i>Bachelor of Computer Science, majoring in Information Technology</i>	
• Cumulative GPA : 3.91 / 4.00	
• Relevant Courses : Data Science, Machine Learning, Data Warehouse and Business Intelligence	

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## EXPERIENCE

<b>PT Telekomunikasi Indonesia Tbk (Telkom Indonesia)</b> – Jakarta, Indonesia	Sept, 2024 – Des, 2024
<i>Developer – Software Engineer Intern</i>	
• <b>System &amp; Performance Optimization:</b> Enhanced application performance by engineering a Redis Pub/Sub caching system for efficient cache invalidation. Additionally, developed a reusable JavaScript module for client-side password validation, significantly reducing backend load.	
• <b>Cloud Migration &amp; Database Refinement:</b> Actively contributed to the large-scale migration of critical government applications and databases to Google Cloud Platform (GCP), while also improving database efficiency through strategic query refactoring.	
• <b>Collaborated</b> within an Agile (Sprint) team at <b>GovTech Procurement LKPP</b> , the core technology unit for national e-procurement, to develop and deliver robust features, while upholding professional standards through training in <b>AKHLAK</b> BUMN core values.	

<b>PT Bukit Makmur Mandiri Utama (BUMA)</b> – Jakarta, Indonesia	Feb, 2024 – Jun, 2024
<i>Developer - Programming Application Team Intern</i>	
• <b>Engineered an AI chatbot</b> using Azure AI Studio and AzureOpenAI, implementing a Retrieval-Augmented Generation (RAG) system to handle internal documents queries. Rapidly dove into the world of AI/ML, specifically Natural Language Processing, Large Language Models (LLMs), Generative AI (GenAI), and Prompt Engineer.	
• <b>Developed a prototype</b> of a conversational AI using Google's Gemini 1.5 Pro, applying advanced prompt engineering with LangChain to deliver high-quality Generative AI interactions.	
• Demonstrated full-stack proficiency by integrating AI functionalities into a .NET and ReactJS application using the <b>Semantic Kernel framework</b> , showcasing versatility across multiple technology stacks.	

<b>Awardee Mobility Program to UiTM</b> – Shah Alam, Malaysia	Mar, 2023 – Aug, 2023
<i></i>	
• Selected as <b>one of only three</b> information technology students from Universitas Sumatera Utara, out of dozens of applicants, for the prestigious <b>student exchange program</b> with Universiti Teknologi Mara, enabling <b>a semester of study abroad</b> .	
• Achieved GPA : 3.61 / 4.00	
• Relevant Courses ; Software Engineering - Theories and Principles, Image Processing	

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## PERSONAL TEAM PROJECTS

**Multimodal Biomedical Chatbot (Thesis Project)** – Medan, Indonesia

Mar, 2025 – Jul, 2025

*Software Developer*

- Engineered a sophisticated Graph-Based Retrieval Augmented Generation (GraphRAG) system, utilizing **Google's text-embedding-004** to construct a comprehensive knowledge graph from the multimodal **MIMIC-IV dataset** within a Neo4j database.
- Developed an end-to-end conversational AI using **LangChain** to orchestrate complex queries between **Google's Gemini 2.5 Pro** Large Language Model and the graph database (**Neo4j**), delivering insights through a user-friendly Streamlit interface supported by a robust **FastAPI** backend.
- Validated system performance using the RAGAs framework, achieving exceptional scores for **faithfulness (97%)**, **context precision (85.7%)**, and **answer correctness (80.5%)**, proving the chatbot's reliability in handling complex biomedical information.

**BUMA AI Chatbot** – Jakarta, Indonesia

May, 2024 – Jun, 2024

*Software Developer & Software Designer*

- Architected an AI Chatbot using Azure Services:** Leveraged the power of **Azure AI Studio** and **AzureOpenAI's** cutting-edge **GPT-4** model to create a Retrieval Augmented Generation (**RAG**) system. This innovative design utilized **Azure Cognitive Search** for efficient data retrieval, **Content Safety** for responsible interaction, and **Azure Blob Storage** for secure file management. Additionally, an authentication with role-based access control (**using hierarchy roles**) ensured limited search and addition of information based on user profiles.
- Developed a user-friendly **ReactJS frontend** for seamless interaction with **Azure Semantic Kernel-powered chatbot**. The system supports file uploads and comprehensive question answering, providing users with a versatile AI companion. A robust **.NET** backend ensures optimal performance.

**Dental Management System** – Shah Alam, Malaysia

Jul, 2023

*Software Developer & Software Tester*

- Developed a Dental Management System (DMS) web application in collaboration with **Malaysian students**. The DMS empowers users to effectively manage oral health.
- Developed a backend application incorporating an **AI-driven dental disease detection** system achieving **87%+ accuracy** in classifying caries, gingivitis, calculus, and hypodontia. Leveraging **Laravel 9**, **MySQL**, and **Python (CNN Algorithm)** on a dataset of over 5,000 images, the system extracts image features and classifies dental diseases.

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## ORGANISATIONAL EXPERIENCE

**Google Developer Student Club (GDSC) USU** – Regional Scope

Sep, 2023 – Jul, 2024

*Staff of Technical Division*

- Organized subject matter to design an interactive curriculum for the current GDSC USU periods, resulting in increasing student satisfaction and **22% decrease** in less-interest rates.
- Established connections with great speakers, securing their experience in workshops and events, resulting in a **35%+ increase** in workshop registrations and a **15%+ growth** in online RSVPs.

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## SKILLS, ACHIEVEMENTS, & OTHER EXPERIENCE

- Technical Stack

Language	: Python   JavaScript   C#   Go   C++   Java
AI & Data	: LangChain   GraphRAG   LLMs   Keras   TensorFlow   Neo4j   SQL   MongoDB
Frameworks & Cloud	: FastAPI   ReactJS   .NET   Laravel   Google Cloud (Vertex AI)   Azure

- Language :

*Indonesian (Native) | English (Fluent, USU English Proficiency Test, October 2022. Grade: Good) | Malay (Fluent) | Arabic (Proficient).*