Muhammad Khoirul Ihsan

Student at Undergraduate Program in Informatics Engineering, Universitas Negeri Semarang

Email · GitHub · Hugging Face · LinkedIn · Personal Page

EDUCATION

Universitas Negeri Semarang   Bachelor of Informatics Engineering
GPA: 3.70 / 4.00 — TOEFL iBT: 90   *Aug 2023 – Aug 2027 (Expected)*

RESEARCH INTERESTS

- Large Language Models and Natural Language Processing, with emphasis on efficient domain adaptation and reasoning
- Multimodal Learning
- Machine Learning for Scientific Data Analysis
- Edge AI on Resource-Constrained Devices
- Computer Vision

PUBLICATIONS

Journal Article

Jurnal Mediasi   *2024*

- **Muhammad Khoirul Ihsan**, Iman YunarNoviadhi, Muhammad Dany Hidayat, et al.
- *Application of AI Chatbots in Teaching and Learning for Operating Systems Courses at Universitas Negeri Semarang in the Era of Industry 4.0 and Society 5.0.*
- Volume 3, Issue 1, pp. 93–105. (Cited by 26)

EXPERIENCE

AI Engineer

Rubythalib.ai · Full-time · Hybrid, Surakarta, Indonesia   *Dec 2025 – Present*

- Conducted R&D on computer vision models, including benchmarking YOLO architectures, hyperparameter optimization, and data augmentation strategies.
- Designed and evaluated object detection and classification models for industrial visual inspection tasks.
- Analyzed dataset quality through annotation QC, curation, and validation to improve training reliability.
- Studied end-to-end vision pipelines, from raw image acquisition to preprocessing and deployable detection models.

SELECTED PROJECTS

Exoplantropy — AI-Based Exoplanet Detection

Python, Machine Learning

- Designed and evaluated a machine learning classifier for exoplanet detection using NASA open-source datasets (Kepler, K2, and TESS), distinguishing confirmed planets, candidates, and false positives via transit-feature modeling.
- Developed during NASA Space Apps Challenge 2025 (Global Nominee), in collaboration with BRIN (National Research and Innovation Agency) researchers Emmanuel Sungging Mumpuni and Thomas Djamaludin.
- Page: Exoplantropy

IndoRoBERTa — Indonesian Financial Sentiment Classifier

Python, Transformers, NLP

- Adapted a pretrained Indonesian RoBERTa sentiment model to the financial domain using large-scale synthetic and masked data augmentation (˜100k samples).
- Evaluated the adapted model on domain-specific financial news data, achieving 97.49% accuracy and F1-score; published on Hugging Face.
- Model: [IndoRoBERTa-Financial-sentiment](#)

Qwen2.5-0.5B-Reasoning-LoRA — Reasoning-Enhanced Small LLM

Python, LLM, LoRA

- Investigated parameter-efficient fine-tuning (LoRA) on a 0.5B-parameter language model to improve chain-of-thought reasoning performance under resource constraints.
- Published model on Hugging Face.
- Model: [Qwen2.5-Reasoning-LoRA](#)

IHSG News Analyst — Stock Movement Prediction from News

Python, PyTorch, Transformers

- Designed and evaluated a multimodal learning model integrating financial news embeddings, sentiment signals, and temporal features to study their impact on stock movement prediction.
- Constructed and analyzed an end-to-end pipeline integrating data collection, modeling, and visualization.
- Code: [IHSG-News-Analyst](#)

AWARDS

NASA International Space Apps Challenge 2025

National Aeronautics and Space Administration (NASA), Jakarta, Indonesia

- Developed a data-driven solution using NASA open datasets to address a space science challenge through machine learning–based analysis.
- Implemented feature extraction and visualization pipelines to support scientific interpretation of astronomical data.
- Selected as Global Nominee among international participants.
- Awarded Best Mission & Concept (Jakarta).

ORGANIZATION/VOLUNTEERING

Speaker at PyCon APAC 2025

Asia-Pacific Python Conference (PyCon APAC), Philippines   *February 2025*

- Delivered a 30-minute technical talk on a Python-based real-time airplane tracking and automated image capture system using IoT devices (Raspberry Pi and camera modules).
- Presented how tracking data from aviation APIs or Software-Defined Radio (SDR) can be combined with geometric modeling and computer vision concepts to enable automated visual acquisition, with future extensions toward AI-based aircraft detection.
- Shared implementation insights on integrating real-time data streams, edge devices and AI-ready processing pipelines for real-time aerial monitoring applications.
- Talk link: [PyCon APAC 2025 session page](#)

SKILLS

- **Programming Languages:** Python, C++, SQL
- **NLP & LLM:** NLP, Transformers, BERT Family, Sentence-BERT, Text Classification, Sentiment Analysis, LLM Fine-Tuning (LoRA / QLoRA), Tokenization & Embeddings
- **AI & Deep Learning:** PyTorch, Computer Vision, YOLO, OpenCV
- **Tools & Platforms:** Hugging Face, Streamlit, Git / GitHub, Linux
- **Other:** IoT, Arduino, ESP32, Raspberry Pi, Jetson Nano

CERTIFICATIONS

- **Mastery Deep Learning** – Digital Talent Scholarship, Ministry of Communication and Digital Affairs (Komdigi), Sep 2025
- **Intermediate Deep Learning** – Digital Talent Scholarship, Ministry of Communication and Digital Affairs (Komdigi), Sep 2025
- **Fundamental Deep Learning** – Digital Talent Scholarship, Ministry of Communication and Digital Affairs (Komdigi), Aug 2025
- **CCNA: Introduction to Networks** – Cisco, Feb 2025

LANGUAGES

- Indonesian (Native)
- English (Fluent)

REFERENCES

Thomas Djamaluddin	**Wilson Wongso**	**Zaenal Abidin**
Professor of Research	PhD Candidate	Associate Professor
National Research and Innovation Agency	University of New South Wales	Universitas Negeri Semarang
thom001@brin.go.id	w.wongso@unsw.edu.au	z.abidin@mail.unnes.ac.id