

## Muhammad Hilmi Asyrofi

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🗨 Architecting Machine Learning in the Cloud | AWS AI Solution Architect | Kaggle Data Science Expert

### QUALIFICATION SUMMARY

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- Experienced Machine Learning Engineer with 5+ years of expertise in designing and deploying scalable Machine Learning solutions, specializing in software development and cloud-based architectures.
- Proven leader in cross-functional collaboration, driving innovation, and mentoring junior engineers to deliver high-impact business-driven outcomes.
- Actively networks with diverse industry professionals through tennis and golf, fostering connections and exchanging insights to enhance collaboration and personal growth.

### EXPERIENCES

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#### Machine Learning Engineer

Singapore

PropertyGuru – Data Science Center of Excellence

Jun 2022 - present

- **Regional Dynamic Pricing System:** Architected an automated pricing system, boosting operational efficiency and increasing update frequency from bi-weekly to daily, optimizing market responsiveness. [[ref](#)]
- **Enterprise Data Product:** Collaborated with cross-functional teams to commercialize data science projects, including an Automated Valuation Model for banks and real estate consultants. [[ref](#)]
- **Advanced NLP System:** Built an in-house address matching system to match external client addresses with internal address records in data warehouse, improving matching accuracy by over 70%.
- **Revenue Optimization:** Integrated online business metrics into ML projects, reducing volatility by over 90% and directly aligning pricing strategies with revenue goals.
- **Innovation:** Advocated Generative AI capabilities to internal stakeholders for business adoptions, including RAG for chatbot use cases and multi-modal Gen AI for image-text moderation.

#### AI Research Engineer

Singapore

School of Computing and Information System, Singapore Management University

Nov 2019 - May 2022

- Contributed to cutting-edge research on **Software Engineering for AI-Enabled Systems (SE4AI)** supervised by ACM Distinguished Scientist [Prof David Lo](#), Director of Information Systems & Technology Cluster.
- **Published 7 papers** in top-tier international conferences and journals (IEEE TSE & ACM ESEC/FSE) with applications in real-time bias detection, deep learning quality metrics, and machine learning testing.
- Pioneered the adoption of Dockerized environments to manage ML projects on Nvidia DGX AI Supercomputer.

#### Co-Founder & CTO

Indonesia

Alinamed - [Pitch Deck](#)

Jan 2019 - Jul 2020

- Directed the **end-to-end software development lifecycle** for health-tech solutions, including requirements analysis, design, project planning, implementation, and continuous improvement.
- Led the strategic selection of comprehensive tech stacks, including programming languages, frameworks, databases, and cloud platforms to deliver robust and efficient software solutions.
- Secured IDR 750 million funding from Telkom Indonesia and won multiple startup awards, including 1<sup>st</sup> Place in Bank Mandiri's Wirausaha Muda Mandiri and 1<sup>st</sup> Winner at Tech-to-Impact by UK-ID Tech Hub.

### EDUCATION

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#### Institut Teknologi Bandung (ITB)

Indonesia

Bachelor of Computer Science

2015 - 2019

- Graduated **Cum Laude** with **GPA 3.68 / 4.00**
- Recognized as an **inspiring graduate** for academic excellence and extracurricular achievements. [[ref](#)]

### CERTIFICATIONS

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**Cloud** AWS Machine Learning Specialty

Credential ID: [cd500dfa03634614a06cd0a0d0e830cd](#)

**Cloud** AWS Solutions Architect Associate

Credential ID: [ECHZM6M1XEE4QDSB](#)

## TECHNICAL SKILLS

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<b>Programming</b>	Python, C++, Java, Javascript, PHP, HTML, React, Golang, C, C#
<b>Cloud</b>	AWS Amazon Web Services, GCP Google Cloud Platform
<b>ML Library</b>	Scikit-learn, PyTorch, TensorFlow, OpenCV
<b>Database</b>	BigQuery, MongoDB, DocumentDB, MySQL
<b>Data Pipeline</b>	Airflow, Google Cloud Composer, AWS MWAA
<b>CI/CD</b>	Github Action, Buildkite, Jenkins, ArgoCD
<b>Reliability</b>	DataDog, AWS CloudWatch, StatusCake
<b>Tool</b>	Git, Docker, Kubernetes, SageMaker, ElasticSearch, Lambda

## SELECTED AWARDS

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- 2024 **LinkedIn Machine Learning Top Voice** | [LinkedIn Post](#)  
Recognized as a top 1% contributor in the Machine Learning community
- 2021 **Kaggle Competitions Expert | Top 1.5% Data Scientist Worldwide** | [LinkedIn Post](#)  
Earned two medals in Kaggle featured competitions, i.e. (1) bronze medal in evaluating student written essays and (2) silver medal in e-commerce product matching.
- 2021 **Bronze Medal | Top 7% (170 from 2,654) | Evaluating Written Essays | NLP** | [Kaggle Leaderboard](#)  
The challenge was to assess the language proficiency of students by analyzing their written essays. I leveraged DeBERTa language models to extract the feature embeddings from the essays. Then, I trained neural network layers to predict the proficiency scores from extracted features.
- 2021 **Silver Medal | Top 5% (101 from 2,426) | Shopee Product Matching | NLP + CV** | [Kaggle Leaderboard](#)  
The task was predicting similar e-commerce products by using product images and titles. I utilized EfficientNet and NFNet to extract feature embeddings from images and utilized BERT and TFIDF to extract feature embeddings from texts. I calculated the cosine distance between products and employed k-NN to find similar products.
- 2021 **Top 3% (28 from 1,034) | Information Extraction - Shopee Data Science Challenge** | [Kaggle Leaderboard](#)  
The challenge was extracting Point of Interest (POI) names and street names from unformatted Indonesia addresses collected by Shopee. I framed the challenge as NER (Named Entity Recognition), where POI and street are the extracted entities. Then, I fine-tuned the IndoNLU model on the customized dataset.
- 2011 **Bronze Medal | Mathematics Olympiad at 2<sup>nd</sup> National Science Camp** | [Certificate](#)  
Awarded by Ministry of Education - Indonesia

## PUBLICATIONS

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- Muhammad Hilmi Asyrofi, Yang Zhou, Imam Nur Bani Yusuf, Hong Jin Kang, Ferdian Thung, and David Lo. “**BiasFinder: Metamorphic Test Generation to Uncover Bias for Sentiment Analysis Systems**”. IEEE Transaction on Software Engineering (Q1, CCF Rank A, Impact Factor 6.11). [PDF](#) [GitHub](#) [DOI](#)
- Zhou Yang, Jieke Shi, [Muhammad Hilmi Asyrofi](#), and David Lo. “**Revisiting Neuron Coverage Metrics and Quality of Deep Neural Networks**”. *28th IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER)*. Honolulu, Hawaii. March 2022. [PDF](#) [GitHub](#)
- [Muhammad Hilmi Asyrofi](#), Zhou Yang, Jieke Shi, Chu Wei Quan, and David Lo. “**Can Differential Testing Improve Automatic Speech Recognition Systems?**”. 37th IEEE International Conference on Software Maintenance and Evolution (ICSME). Luxembourg. September 2021. [PDF](#) [GitHub](#) [DOI](#)
- Zhou Yang, Harshit Jain, Jieke Shi, [Muhammad Hilmi Asyrofi](#), and David Lo. “**BiasHeal: On-the-Fly Black-Box Healing of Bias in Sentiment Analysis Systems**”. 37th IEEE International Conference on Software Maintenance and Evolution (ICSME). Luxembourg. September 2021. [PDF](#) [GitHub](#) [DOI](#)

[Google Scholar](#) for more publications

## INTERPERSONAL SKILLS

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- 2018 **Granted Scholarship** from Rumah Amal Salman ITB. This scholarship focused on **capacity building** to create future leaders. I was awarded as **top 10 awardees** of this scholarship
- 2017 Selected participants to take **leadership training** from Siam Cement Group (SCG). Designed by SCG Learning, the program aims to give participants **fundamental leadership concepts** and provide them opportunities to **practice the interpersonal skill** with other young leaders

I declare the details stated to be true and complete.  
(This resume is updated on January 13<sup>th</sup>, 2025)