Muhammad Hilmi Asyrofi

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🐙 github.com/mhilmiasyrofi | 💼 linkedin.com/in/mhilmiasyrofi/ | Portfolio | Google Scholar
💬 Architecting Machine Learning in the Cloud | Kaggle Data Science Expert | Certified Solution Architect

QUALIFICATION SUMMARY

Seasoned Machine Learning Engineer with over 5 years of experience in software development and machine learning engineering. Demonstrated expertise in designing, deploying, and optimizing advanced ML models and systems. Skilled in leading cross-functional teams to deliver high-impact projects, enhancing performance, cost-efficiency, and reliability. Dedicated to continuous improvement and lifelong learning, actively engaging in tech events and sports (tennis and golf).

EXPERIENCES

Machine Learning Engineer   Singapore
PropertyGuru - Data Science Center of Excellence   Jun 2022 - present
- **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]
- **Regional Dynamic Pricing System:** Architected and developed a multi-country dynamic pricing system, automating pricing workflows and increasing price update frequency from bi-weekly to daily.
- **Innovation:** Promoted Generative AI capabilities to internal stakeholders for business adoptions, including RAG for chatbot use cases and multi-modal Gen AI for image-text moderation.
- **Cross-Team Collaboration:** Led initiatives to fix 150k inaccurate address listings in Malaysia, boosting location-based listing accuracy and increasing revenue by over USD 100k in six months.
- **Address Matching System:** Developed an advanced NLP-based system to synchronize physical locations with address records, improving matching rates by over 70%.
- **Trustworthy Metrics Integration:** Implemented metrics to enhance ML system reliability, reducing prediction volatility by over 90%.

AI Research Engineer   Singapore
School of Computing and Information System, Singapore Management University   Nov 2019 - May 2022
- Conducted research on **Trustworthy AI** supervised by ACM Distinguished Scientist Prof David Lo
- **Published 7 papers** in international conferences and journals, i.e., IEEE TSE (Q1, CCF Rank A, Impact Factor: 9.32), ACM ESEC/FSE (CORE A*), IEEE ICSME (CORE A), and IEEE SANER (CORE A)
- Maintained ML projects using Dockerized environments on Nvidia DGX AI Supercomputer

Co-Founder & CTO   Surabaya, Indonesia
Alinamed - Pitch Deck, Playstore   Jan 2019 - Jul 2020
- Managed the **end-to-end software development lifecycle**, including requirements analysis, design, code review, implementation, testing, and delivery.
- Led the selection of programming languages, frameworks, cloud services, and databases.
- Won prestigious startup competitions, e.g., 1st Winner at WMM by Bank Mandiri, and Winner at Tech-to-Impact by UK-ID Tech Hub. Secured IDR 750 million investment from Telkom Indonesia

Machine Learning Engineer Intern   Jakarta, Indonesia
Bukalapak   May 2018 - Aug 2018
- Developed object detection and character recognition features for search-by-image functionality. Localized text lines using CTPN and combined bounding boxes for context-related words.

EDUCATION

Institut Teknologi Bandung (ITB)   Bandung, Indonesia
Bachelor of Computer Science   2015- 2019
- Graduated **Cum Laude** with a **GPA 3.68** / 4.00
- Recognized as an **inspiring graduate** for academic excellence and extracurricular achievements. [ref]

HONORS & AWARDS

2022 **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 Competition at 2nd National Science Camp |** Certificate
Awarded by Ministry of Education - Indonesia

CERTIFICATIONS

AWS	AWS Certified Solution Architect - Associate Credential ID: ECHZM6M1XEE4QDSB
Deeplearning.AI	Neural Network and Deep Learning Credential ID: D8GK6SD6Y5TG
Deeplearning.AI	Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization Credential ID: SGC98U3G8K6P

TECHNICAL SKILLS

Programming	Python, C++, Java, PHP, JavaScript, HTML, React, Golang, C, C#
Cloud	AWS Amazon Web Services, GCP Google Cloud Platform
ML Library	Scikit-Learn, PyTorch, TensorFlow, OpenCV
Database	MySQL, BigQuery, PostgreSQL, MongoDB

PUBLICATIONS

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 9.32). 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, Hawai. March 2022. PDF GitHub DOI

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

Muhammad Hilmi Asyrofi, Yang Zhou, and David Lo. "**CrossASR++: A Modular Differential Testing Framework for Automatic Speech Recognition**". *29th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE '21).* Athens, Greece. August 2021. PDF GitHub Video DOI

Google Scholar for more publications

INTERPERSONAL SKILLS

2018 Granted Scholarship from Rumah Amal Salman ITB. Recognized as a **top 10 awardee for capacity building and leadership development**.

2017 Selected for leadership training by Siam Cement Group (SCG), focusing on fundamental leadership concepts and interpersonal skills.

I declare the details stated to be true and complete.
(This resume is updated on August 4th, 2024)