# 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

- Over 5 years of experience as a **Machine Learning Engineer**, specializing in transforming complex challenges into business-driven solutions leveraging data science.
- Expert in **software development and cloud-based machine learning**, with a track record of leading cross-functional teams to deliver high-impact & scalable projects.
- Committed to **continuous learning** by staying at the forefront of technology through active engagement in industry events, while balancing my life with passions like tennis and golf.

## EXPERIENCES

**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.
- **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]
- **Address Matching System**: Developed an advanced NLP-based system that matches external client addresses with internal address records, improving matching accuracy by over 70%.
- **Business Metrics Framework**: Spearheaded the integration of online metrics into DS projects, directly aligning pricing algorithms with revenue goals and enhancing reliability by reducing volatility by over 90%.
- **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.

**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, 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**                                                                                                   Indonesia
Alinamed - Pitch Deck, Playstore                                                                        Jan 2019 - Jul 2020

- Managed the **end-to-end software development lifecycle**, including requirements analysis, design, implementation, code review, testing, deployment, maintenance, and feedback & improvement.
- Led the selection of programming languages, frameworks, cloud services, and databases.
- Won prestigious startup competitions, e.g., 1$^{st}$ Winner at WMM by Bank Mandiri, and Winner at Tech-to-Impact by UK-ID Tech Hub. Secured IDR 750 million funding from Telkom Indonesia

## 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<br>Credential ID: [ECHZM6M1XEE4QDSB](#) |
| **Deeplearning.AI** | Neural Network and Deep Learning<br>Credential ID: [D8GK6SD6Y5TG](#) |
| **Deeplearning.AI** | Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization<br>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** | BigQuery, MongoDB, DocumentDB, MySQL |
| **CI/CD** | Github Action, Buildkite, ArgoCD |
| **Data Pipeline** | Airflow, Google Cloud Composer, AWS MWAA |
| **SRE** | DataDog, AWS CloudWatch, StatusCake |
| **Tool** | Git, Docker, Kubernetes, FastAPI, ElasticSearch, Lambda |

## PUBLICATIONS

<u>Muhammad Hilmi Asyrofi</u>, 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, <u>Muhammad Hilmi Asyrofi</u>, 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](#)

<u>Muhammad Hilmi Asyrofi</u>, 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, <u>Muhammad Hilmi Asyrofi</u>, 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

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 September 17th, 2024)