Muhammad Hilmi Asyrofi

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💬 A machine learning enthusiast who aims to make ML systems robust, safe, and ethical

💬 Please kindly explore my personal projects at https://mhilmiasyrofi.github.io/portfolio/

🐙 github.com/mhilmiasyrofi | 🔗 mhilmiasyrofi.github.io | 🔗 linkedin.com/in/mhilmiasyrofi/

EDUCATION

Institut Teknologi Bandung (ITB)   Bandung, Indonesia
Bachelor of Computer Science   2015 - 2019
- **Cum Laude** with **GPA 3.68** / 4.00 (transcript)
- I was honored as an inspiring graduate because of my outstanding academic and non-academic achievements

EXPERIENCES

AI Research Engineer   Singapore
School of Computing and Information System, Singapore Management University   Nov 2019 - present
- Conducted research on **Trustworthy Artificial Intelligence** 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: 6.11), ACM ESEC/FSE (CORE A*), IEEE ICSME (CORE A), and IEEE SANER (CORE A)
- M**aintained** various **PyTorch and TensorFlow machine learning projects** using Docker

Co-Founder & CTO   Surabaya, Indonesia
Alinamed - Company Profile, Playstore, AppStore, Website   Jan 2019 - July 2020
- **Managed the end-to-end software development lifecycle** by collaborating across members, including functional requirements analysis, design specification, technical code review, project planning, and implementation of applications
- Managed the selection of programming languages, frameworks, cloud, web servers, databases, and mobile
- Won prestigious startup **competitions**, e.g., 1st Winner at WMM by Bank Mandiri, 1st Winner at Startup Weekend Surabaya, 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** as a part of the search-by-image feature. It's implemented using Faster RCNN on Tensorflow
- Developed **character recognition** to detect seller's information (e.g., phone number and Instagram username) in the e-commerce product image. Localized text lines using CTPN (Connectionist Text Proposal Network). Implemented post-processing techniques on OpenCV to combine several words within the same context

HONORS & AWARDS

2021   **Silver Medal | Top 5% (101 from 2,426) | Shopee Product Matching |** 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.

2019   **Southeast Asia Machine Learning School (SEA MLS)**
A five-day ML training event held by Southeast Asia's AI experts working at DeepMind UK and Google Brain USA. I was one of 200 chosen participants out of 1200 applicants across Southeast Asia and India

2019   **Gojek Upscale 02 for Indonesia's Data Science Enthusiast |** Certificate
A complete two-day experience from the Gojek data science team. It covered machine learning, data modeling, and Gojek data science practices. I was one of 20 chosen participants out of 1,000 applicants

2011   **Bronze Medal | Mathematics Olympiad at 2nd National Science Camp |** Certificate
Awarded by Ministry of Education - Indonesia

TECHNICAL SKILLS

Programming	Python, C++, React, Golang, Javascript, Java, C, PHP, HTML, CSS, C#, Arduino, Unity, Haskell
ML Library	PyTorch, Tensorflow, Keras, OpenCV, Scikit-Learn
Cloud	AWS, GCP, Microsoft Azure
Database	MySQL, PostgreSQL, MongoDB

MACHINE LEARNING CERTIFICATIONS

Deeplearning.AI   Neural Network and Deep Learning
                                Credential ID: D8GK6SD6Y5TG

Deeplearning.AI   Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization
                                Credential ID: SGC98U3G8K6P

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 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, Hawai. 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

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

Zhou Yang, Muhammad Hilmi Asyrofi, and David Lo. "**BiasRV: Uncovering Biased Sentiment Predictions at Runtime**". *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

Muhammad Hilmi Asyrofi, Ferdian Thung, David Lo, and Lingxiao Jiang. "**CrossASR: Efficient Differential Testing of Automatic Speech Recognition via Text-To-Speech**". *36th IEEE International Conference on Software Maintenance and Evolution (ICSME).* Adelaide, Australia. October 2020. PDF   GitHub   Video   DOI

Muhammad Hilmi Asyrofi, Ferdian Thung, David Lo, and Lingxiao Jiang. "**AUSearch: Accurate API Usage Search in GitHub Repositories with Type Resolution**". *27th IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER).* Ontario, Canada. February 2020. PDF   GitHub   Video   DOI

INTERPERSONAL SKILLS

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 March 16th, 2022)