Muhammad Hilmi Asyrofi

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💬 A machine learning enthusiast is looking for challenging opportunities

💬 Please browse my past projects at https://mhilmiasyrofi.github.io/portfolio/

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

EDUCATIONS

Institut Teknologi Bandung (ITB)
Bandung, Indonesia
2015 - 2019

Bachelor of Computer Science

- **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

Vrije Universiteit Amsterdam
Amsterdam, Netherlands
July 2018

Summer School Student of "Big Data in Society" Advanced Bachelor Course

- Achieved excellent A grade (transcript)

EXPERIENCES

Research Engineer <> Fulltime
Singapore
Nov 2019 - present

School of Computing and Information System, Singapore Management University

- Conducted research on **Machine Learning Testing** supervised by ACM Distinguished Scientist Prof David Lo
- **Published** 6 papers in reputable software engineering conferences, i.e., ACM ESEC/FSE, IEEE SANER, and IEEE ICSME
- Experienced in **maintaining** various PyTorch and TensorFlow ML projects using Docker

Co-Founder & CTO <> Self-employed
Surabaya, Indonesia
Jan 2019 - July 2020

Alinamed - Company Profile, Playstore, AppStore, Website

- **Managed the software development lifecycle** by collaborating across members to evolve SDLC, 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 <> Internship
Jakarta, Indonesia
May 2018 - Aug 2018

Bukalapak

- 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 Price Match Guarantee |** 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) | Shopee Code League 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	**Proficient**	**Experienced**
	Python, C++	Golang, Javascript, Java, C, PHP, HTML, CSS, C#
Database	**Proficient**	**Experienced**
	MySQL	PostgreSQL, MongoDB

MACHINE LEARNING CERTIFICATE

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. 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

SOFTWARE ENGINEERING PROJECTS

Python, C++, OpenCV	**Autonomous Soccer Robot | ITB Robotic Team** Developed end-to-end image processing for the perception system: (1) Implemented localization algorithm by combining visual odometry and landmark detection, (2) Implemented object detection algorithms to recognize robot environment, such as ball detection and goal-post detection.
Python	**PiGlass - Hear Your Text |** 1st Winner at a Competition on Building Device for Visually Impaired People Developed a device for visually impaired people to help them hear what they see. It's powered by a RaspberryPI as a processing unit. It captured an image using a camera, recognized texts and then output voices
Javascript	**PR Ojek | Web Development Course Project** An online platform for taxi bikes to help people find a taxi bike easily. It's implemented in MEAN Stack development. There was a chatting feature using the REST service. The project used MongoDB as database
Java, Android	**Sinau - Find Your Tutor Here | Gemastik Semifinalist - Apps Development** An android-based chatting app developed for student and mentor to make the communication easily

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 December 19th, 2021)