FAISHAL ZHARFAN

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RESEARCH INTERESTS

Networked Systems, Edge Computing, Multimedia Systems, System-for-ML, Mobile Systems, Wireless Systems

EDUCATION

Bachelor of Science, Bandung Institute of Technology (ITB) — Bandung, Indonesia
#1 Science & Engineering school in Indonesia — *Jul '19 - Jul '24*
Telecommunication Engineering; CGPA: 3.73/4.0 (**Cum Laude, Rank: 2nd/37**)

Erasmus+ Student Mobility Program, University of Zagreb — Zagreb, Croatia
Faculty of Electrical Engineering and Computing, Full-ride scholarship from the EU — *Feb '22 - Jul '22*

SELECTED PUBLICATIONS

CONCIERGE: Towards Accuracy-Driven Bandwidth Allocation for Video Analytics Applications in Edge Network — 2024
Yuyang Huang, Faishal Zharfan, Hendrawan Hendrawan, Haryadi S. Gunawi, Junchen Jiang
2024 IEEE International Conference on Edge Computing & Communications (EDGE '24)

Modelling of Wireless OFDM System with Deep Learning-based Modulation Detection — 2022
Rahmat Mulyawan, Faishal Zharfan, Muhamad Rizki Nur Rahman, Infall Syafalni, Nana Sutisna, Trio Adiono
2022 International Symposium on Electronics and Smart Devices (ISESD '22)

RESEARCH EXPERIENCES

International Undergraduate Research Collaboration on Video Analytics — *Oct '22 - Jul '24*
Undergraduate Research Assistant

- The research aimed to improve Video Analytics Applications' accuracy by implementing **Concierge**, an accuracy-driven resource allocator
- Collaborated with **Prof. Junchen Jiang of the University of Chicago** and **Prof. Hendrawan of Bandung Institute of Technology**
- **Enabled self-adaptability on DDS & AWStream** to automatically adjust its configuration in accordance to the available bandwidth and **optimized its algorithm** by **utilizing RAMDisk for caching, switching FFmpeg to OpenCV** for quicker decoding, and **enabling batching** to process multiple images at a time
- **Optimized** Concierge's allocation algorithm to **reduce the overhead by 50%, implemented inferDiff**, a metric used in Concierge to estimate accuracy, and **wrote ∼300 lines of shellscript** to automate data measurement
- Successfully **improved the average f1-score** of DDS and AWStream by **7.5% over the state-of-the-art** as well as **cut** DDS and AWStream **processing latency** by **50%**

Undergraduate Research Collaboration on Mobile EEG — *Jul '23 - Jun '24*
Undergraduate Research Assistant

- The research aimed to design an E2E early seizure detection system and perform analysis on data transmission
- Collaborated with **Wervyan Shalannanda of Bandung Institute of Technology**
- Designed an early seizure detection system frontend utilizing **EEG electrode cap**, **OpenBCI Cyton Board**, and **Raspberry Pi** and **wrote ∼200 lines of code** to automate data measurement
- Analyzed the **E2E data transmission delay** of the system under 3 network conditions (LAN, 2 Subnets, Cloud)

Undergraduate Research Collaboration on DL for 5G Communications — *Apr '22 - Dec '22*
Undergraduate Research Assistant

- The research aimed to address the low accuracy trend on FB-based AMC by employing CNN model as the classifier
- Collaborated with **Prof. Trio Adiono** and **Rahmat Mulyawan of Bandung Institute of Technology**
- Designed a **smart wireless OFDM** system with deep learning-based modulation detection
- Successfully **achieved 91.375%** of accuracy through experiments by utilizing Adalm Pluto

TEACHING

Teaching Assistant	ET4047: Artificial Intelligence & Big Data Analysis for Telecommunication
Teaching Assistant	ET2107: Programming
Lab. Assistant Coordinator	ET2214: Telecommunication Laboratory Works IIB (Computer Networks I)
Lab. Assistant Coordinator	ET2111: Telecommunication Laboratory Works I (Digital System Design)

INDUSTRY EXPERIENCES

L1 Support Engineer, Mobileum *Nov '24 - Present*
- Joined the team to support system maintenance and engage customers to ensure customer satisfaction

Technical Engineer Intern, ZTE Indonesia *Jul '24 - Nov '24*
- Gained foundational knowledge in Networking technologies and protocols (VLAN, MPLS, VPN, BGP, OSPF)

COMPUTER SCIENCE SKILLS

Programming Languages	Python, Go, C, C++, MATLAB, Qiskit
Systems	Linux Kernel, Ubuntu, Shellscript, FFmpeg, gRPC
Internet of Things (IoT)	Raspberry Pi, OpenBCI Cyton, Arduino UNO, ESP8266
Cloud Computing	GCP, Chameleon Cloud, AWS, Huawei Cloud
Machine Learning & AI	Tensorflow, Keras, Pytorch, OpenCV
Network Simulation	eNSP, Packet Tracer
Orchestration Systems	Docker, Kubernetes
Database	MySQL, MongoDB
Other	LaTeX, CST Studio, HFSS

ACTIVITIES

Huawei Seeds for The Future 2022 *Aug '22*
Indonesia Representative

- Participated in Tech4Good competition, proposed **CanTing**, an early stunting detection system utilizing **Huawei Cloud** and **ML Kit**
- **Selected along 10 Indonesia delegations out of 200 applicants**

AWARDS

3rd Winner - Huawei ICT Competition on Computing Track at National Level — 2023
- Tackled OS & DB challenges utilizing Huawei **Kunpeng**, **EulerOS**, and **GaussDB**
- Won **3rd Winner out of 15 teams from the top 15 universities in Indonesia**

3rd Winner - Huawei ICT Competition on Network Track at Global Level — 2023
- Configured a complex real-world scenario network topology **over an intensive 8-hour period**
- Won **3rd Winner out of top 50 teams from 32 countries around the world**

2nd Winner - Huawei ICT Competition on Network Track at Regional (Asia-Pacific) Level — 2023
- Configured a real-world scenario network topology utilizing Networking Protocols (**Routing**, **Switching**, **WLAN**)
- Tackled computer networking challenges that are equivalent to the **HCIE certification exams**
- Won **2nd Winner out of 12 teams of Asia-Pacific countries representation**

1st Winner - Huawei ICT Competition on Network Track at National Level — 2022
- Participated in a prestigious and highly competitive international ICT Competition
- Tackled computer networking challenges consisting of **Routing**, **Switching**, **WLAN**, and **Security** technologies
- Won **1st Winner out of 30 teams from the top 30 universities in Indonesia**

2nd Place - Most Outstanding Student of Telecommunication Engineering, ITB — 2022
- Selected based on academic and non-academic performance

HONORS

Scholarship Awardee - ITB Electrical Engineering Alumni Association	2024, 2022
Ganesha Award - Ganesha Karsa, ITB	2023
Fellowship Awardee - Summer of Reproducibility, UC Santa Cruz	2023
Scholarship Awardee - Erasmus+ International Credit Mobility	2022

REFERENCES

Junchen Jiang	**Hendrawan**	**Wervyan Shalannanda**
Assistant Professor	Full Professor	Assistant Professor
University of Chicago	*Bandung Institute of Technology*	*Bandung Institute of Technology*
junchenj@uchicago.edu	hend@itb.ac.id	wervyan@itb.ac.id