

Fandi A. Wiranata

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RESEARCH INTERESTS

Operating/Storage Systems (Advance the reliability, performance, and scalability).

Distributed/Cloud Systems (Cloud and data-intensive processing systems; and memory & storage).

Wireless Communication Networks (LTE and 5G mobile communications networks).

Machine Learning (Systems and networks predictability).

EDUCATION

2018 - School of Electrical Eng. and Informatics (**Most Outstanding Student**), Institut Teknologi Bandung
Present (**ITB**), Bandung, Indonesia. Undergraduate in Telecommunications Engineering, GPA 3.61 out of 4.0.

PUBLICATIONS

- 2022 **Fandi A. Wiranata**, David Lange. **JETNET: ML-based predictor for Event Classifier of JET's using 2015 CMS Open Data** in the CERN (European Orga. for Nuclear Research) Technical Report.
- 2022 Daniar H. Kurniawan, Ruipu Wang, Kahfi Zulkifli, **Fandi Wiranata**, John Bent, Ymir Vigfusson, Haryadi S. Gunawi. **EV-Store: Scaling Embedding Tables for Deep Recommendation Systems**. (In-submission)
- 2020 **Fandi A. Wiranata**, Wervyan Shalannanda, Rahmat Mulyawan, and Trio Adiono. **Automation of Virtualized 5G Infrastructure Deployment Using Mosaic 5G Operator over Kubernetes Supporting Network Slicing** in the 14th International Conference on Telecommunication Systems, Services, and Applications (TSSA).

TALKS

- 2020 **Automation of Virtualized 5G Infrastructure Deployment Using Mosaic 5G Operator over Kubernetes Supporting Network Slicing** in the 14th International Conf. on Telecommunication Systems, Services, and Applications (TSSA).

EXPERIENCE

- Jul 2022 - **CERN Summer Student Program** – Geneva, Switzerland
- Aug 2022
 - CERN (European Organization for Nuclear Research) is the site of the Large Hadron Collider (LHC), the world's largest and highest-energy particle collider. I have been selected as one of the CERN Non-Member State 2022 (out of 2733 applicants).
 - Developed JETNET: ML-based predictor capable of achieving >90% inference accuracy and 42 μ s inference latency for each event in the Analysis Grand Challenge (AGC) project, as a part of the IRIS-HEP ecosystem. Supervised by Dr. David Lange in the EP-UCM department.
- Feb 2022 - **Wireless Engineer/Script Developer at Huawei Indonesia** – Jakarta
- July 2022
 - Improved work efficiency in XL project up to 98x faster by developing tools using python scripts for automatic data transformation from CDD/engineering parameters and IP plans to CME readable templates integrated in the ITSC platform.
 - Provided >5k TSEL scripts for various scenarios, which are expand LTE, convert/moving, SwapBBU, new site (2G, 4G). Also, supported ISDP update for 25k base stations in XL project.
- Feb 2021 - **Undergraduate Researcher at University of Chicago** – US
- Present
 - Work with Prof. Haryadi S. Gunawi and his PhD students to conduct research on distributed systems and ML to reduce tail latencies. Please see my research projects section for details.
 - Remote working from Indonesia in GIK Lab.
- Jan 2021 **AUN-KU Winter Courses at Kyoto University** – Kyoto, Japan
 - Student Mobility Program toward Human Security Development (HSD) that's designed for undergraduate students to study the concept of HSD and Energy Science.
 - As one of 35 selected students from 10 countries of the ASEAN Uni. Network (AUN).
- Sep 2020 - **Network Engineer at Xirka Silicon Technology Inc.** – Bandung, Indonesia
- Oct 2020
 - Developed Virtualized 5G Infrastructure using OpenAirInterface (OAI) on Xirka resources. The Virtualized 5G Infrastructure also support Radio slicing.
 - Supervised by Prof. Trio Adiono.

- Jul 2020 - **Research Internship at NTUST** – Taipei, Taiwan
- Aug 2020
 - Worked on Mosaic5G Project to integrate Mosaic 5G with several platforms (OAI, Kubernetes, ElasticSearch, and Operator SDK) to create virtualized 5G infrastructure.
 - Supervised by Prof. Ray-Guang Cheng.
- Jan 2020 - **Pre-Research Intern at NTUST** – Bandung, Indonesia
- Mar 2020
 - This is a remote research mentorship program for talented International students in collaboration at BMW Lab, NTUST.
 - Focused on studying LTE and 5G Architecture and having weekly report and assignment that teach me to stay productive. Supervised by Prof. Ray-Guang Cheng.

AWARDS

ITB	Ganesha Karya. Contribute in developing science or technology that has an impact on ITB	2021
ITB	Top 4 Outstanding Students at ITB	2021
Faculty	The Most Outstanding Student of School of Electrical Eng. and Informatics, ITB.	2021
Major	The Most Outstanding Student of Telecommunication Engineering.	2021
Volunteer	Best volunteer at Syamsi Dhuha Foundation.	2020
Scholarship	Granted scholarships for monthly expenses from Syamsi Dhuha Foundation.	2020
Scholarship	Granted a full scholarship for my tuition fees during my study in Institut Teknologi Bandung. The details can be looked at the official website: www.itbuntutksemua.com .	2018

COMPETITIONS

2 nd Place	International	Huawei - ICT Competition, Global Final level at Cloud Track.	2022
Best Presentation	International	Hackathon was held by IEEE - South East Asia Circuits and Systems Society (SEACAS) at NTU, SG. We built AIS (Automatic Irrigation Systems): real time monitoring & control of discharge through the main dam.	2022
1 st Place	National	Huawei - ICT Competition at Cloud Track, won USD2500. Next, representing Indonesia's Cloud team for Regional Asia-Pacific.	2020
3 rd Place	Regional	Huawei - ICT Competition Preliminary Stage at Cloud Track. Representing ITB's Cloud Team for National level.	2020
3 rd Place	National	Paper Writing Competition at State University of Surabaya. We built a reactor to improve pollution filtration which include monitoring systems.	2020
1 st Place	International	Sustainability Drives Innovation at University of Malaya, Malaysia. We created a green paddle efficiency design to improve the performance of boat.	2020
3 rd Place	International	Idea Competition (Hackathon) at ITB. We built an IoT system to solve the garbage problem by Integrating Eco-Friendly Trash Can and GoTrash App.	2019
1 st Place	National	Essay Writing Competition at ITB. We initiated a system to optimize waste that is Integrated Waste Quality Monitoring System.	2019
1 st Place	National	Industrial Engineering Scientific Fest at U. of Singaperbangsa Karawang.	2019
4 th Place	National	Industrial Engineering Scientific Fest at U. of Singaperbangsa Karawang. We initiate the use of snails as aggressive periodontitis prevention materials.	2019
Semifinalist	National	Paper Writing Competition at Indonesian Institute of Sciences (LIPI). Top 20 out of 3500 papers in social and behavioral sciences topic.	2017
Finalist	National	Industrial Automation and Robotic Competition at Institut Teknologi Sepuluh Nopember (ITS).	2016
Finalist	National	Paper Writing Competition at Indonesian Institute of Sciences (LIPI). We built a tool to optimize industry's air pollution filtration using Ca(OH) ₂ .	2016
1 st Place	National	Paper Writing Competition at State Polytechnic of Malang. We built a tool that utilize gravity and gear optimization to create renewable electricity.	2015

RESEARCH PROJECTS

- 2022 **Sherpa Systems:** Development of **LoVi App** and **SherpaNet Model** as Smart Assistant System for Low Vision (LoVi) Based on Deep Convolutional Neural-Network (**CNN**)—**ITB.**
 - LoVi App has 3 modes, which are outdoor mode, indoor mode, and currency mode.
 - SherpaNet model has >90% accuracy in classifying objects in each mode.

- 2021 **EV-Store : Embedding-aware Storage** System with Adaptive **Mixed Precision Caching** Architecture—**University Of Chicago**.
 - Improved the hit rate up to 5x and 5-10% improvement on a large cache size.
 - Increased Facebook-DLRM inference throughput up to 33% with only a 0.4% accuracy loss.
- 2021 **IONet : ML-based per-I/O latency predictor**—**University Of Chicago**.
 - Capable of achieving 80-97% inference accuracy and sub-10 μ s inference overhead for each I/O.
- 2021 **CORTX : Improve the performance of Cortx-motr & S3-Server**—**University Of Chicago & Seagate**.
 - CORTX is a distributed object storage system for great efficiency, massive capacity, and high utilization.
 - As a bug hunter as well as a research engineer to find the cause of tail latency on the system.
- 2021 **SherpaNet : Blind Assistance Systems based on Deep Convolutional Neural Network**—**ITB**
 - Capable to classify sidewalks into 4 categories (turn right, turn left, stop, and straight) up to >80% acc.
- 2020 Automation of **Virtualized 5G Infrastructure** Deployment Using Mosaic 5G Operator over **Kubernetes** Supporting **Network Slicing**—**Xirka Silicon Technology & NTUST-Taiwan**.
 - Developed network automation using Kubernetes for automating application deployment, while using Openshift Operator as a tool to manage 5G services.

SYSTEM & APP DEVELOPMENT PROJECTS

Spam App : Spam Detection App (Based on SpamNet Model) Deployed on GCP Using App Engine	2021
Mosaic 5G Testbed : Developed virtualized 5G infrastructure (collaboration with Xirka Silicon Tech. Inc.)	2020
Design and Optimization of Slotted Microstrip Antenna for 3.8-4.0 GHz Application.	2020
Smart Parking System : IoT systems for monitoring and Controlling the Parking Lot.	2019

SKILL CERTIFICATION

Cloud Computing	HCIA - Cloud Computing from Huawei . Capable of collaborating in the deployment and O&M of cloud computing with virtualization technology.	2020
Cloud Service	HCIA - Cloud Service from Huawei , have mastered cutting-edge knowledge and skills of public cloud and are proficient in using Huawei cloud service products.	2020
Artificial Int. (AI)	HCIA - AI from Huawei . Capable of using AI, ML/DL and other technologies to achieve the design, development and innovation of AI products and solutions.	2020

TEACHING ASSISTANT

ET2103 Electric Circuit Course at ITB .	2020
EL1200 Introduction to Circuit Analysis Course at ITB .	2020

TECHNICAL SKILLS

ML/AI	PyTorch, Tensorflow and Keras .
Mobile Dev.	Android Studio
Database	Hive, Elasticsearch, MySQL, MariaDB, SQLite, and RocksDB .
Cloud Computing	AWS, Google Cloud, Chameleon Cloud, and Huawei-Cloud
OS	Hacking Linux kernel
Orchestration Sys.	Kubernetes and Docker
Automation Sys.	Experienced in projects using Ansible
Networking	Routing & Switching, Open Air Interface (OAI), and Mosaic-5G .
IoT	Worked in projects using Arduino and NodeMCU .
PL	C/C++, Python, Haskell, Java and Go .

REFERENCES

David Lange	Computational Physicist at CERN & Princeton University; David.Lange@cern.ch
Haryadi S. Gunawi	Associate Professor, Computer Science, University of Chicago; haryadi@cs.uchicago.edu
Ray-Guang Cheng	Distinguished Professor, Electronic and Computer Engineering, NTUST-Taiwan; crg@mail.ntust.edu.tw
Trio Adiono	Professor and head of University Center of Excellence on Microelectronics, ITB; adiono@stei.itb.ac.id

I declare the details stated to be true and complete.
(CV updated on August 30, 2022)