

# Fandi A. Wiranata

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in <https://www.linkedin.com/in/fandi-a-wiranata/>

👤 <http://fandiazam.com/>

🐙 <https://github.com/fandiazam>

## 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 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 14<sup>th</sup> 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 14<sup>th</sup> International Conf. on Telecommunication Systems, Services, and Applications (TSSA).

## EXPERIENCE

- Jul 2022 - **CERN Summer Student Program** – Geneva, Switzerland  
Aug 2022
  - I have been selected as one of the CERN Non-Member State 2022 (out of 2733 applicants).
  - I am implementing ML analysis for efficient access of Analysis Grand Challenge (AGC), 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	<b>Ganesha Karya.</b> Contribute in developing science or technology that has an impact on ITB	2021
ITB	<b>Top 4 Outstanding Students at ITB</b>	2021
Faculty	The <b>Most Outstanding Student</b> of <b>School of Electrical Eng. and Informatics</b> , ITB.	2021
Major	The <b>Most Outstanding Student</b> of Telecommunication Engineering.	2021
Volunteer	<b>Best volunteer</b> at Syamsi Dhuha Foundation.	2020
Scholarship	<b>Granted scholarships for monthly expenses</b> from Syamsi Dhuha Foundation.	2020
Scholarship	<b>Granted a full scholarship for my tuition fees</b> during my study in Institut Teknologi Bandung. The details can be looked at the official website: <a href="http://www.itbuntutksemua.com">www.itbuntutksemua.com</a> .	2018

## COMPETITIONS

2 <sup>nd</sup> Place	International	<b>Huawei - ICT Competition</b> , Global Final level at <b>Cloud Track</b> .	2022
Best Presentation	International	<b>Hackathon</b> was held by <b>IEEE - South East Asia Circuits and Systems Society (SEACAS)</b> in NTU, SG. We built <b>AIS (Automatic Irrigation Systems)</b> : real time monitoring & control of discharge through the main dam.	2022
1 <sup>st</sup> Place	National	<b>Huawei - ICT Competition at Cloud Track</b> , won USD2500. Next, representing Indonesia's Cloud team for <b>Regional Asia-Pacific</b> .	2020
3 <sup>rd</sup> Place	Regional	<b>Huawei - ICT Competition Preliminary Stage at Cloud Track</b> . Representing ITB's Cloud Team for <b>National level</b> .	2020
3 <sup>rd</sup> Place	National	<b>Paper Writing Competition</b> at State University of Surabaya. We built a <b>reactor</b> to improve pollution filtration which include <b>monitoring systems</b> .	2020
1 <sup>st</sup> Place	International	<b>Sustainability Drives Innovation</b> at <b>University of Malaya, Malaysia</b> . We created a green paddle efficiency design to improve the performance of boat.	2020
3 <sup>rd</sup> Place	International	<b>Idea Competition (Hackathon)</b> at ITB. We built an IoT system to solve the garbage problem by Integrating Eco-Friendly Trash Can and GoTrash App.	2019
1 <sup>st</sup> Place	National	<b>Essay Writing Competition</b> at ITB. We initiated a system to optimize waste that is <b>Integrated Waste Quality Monitoring System</b> .	2019
1 <sup>st</sup> Place	National	<b>Industrial Engineering Scientific Fest</b> at U. of Singaperbangsa Karawang.	2019
4 <sup>th</sup> Place	National	<b>Industrial Engineering Scientific Fest</b> at U. of Singaperbangsa Karawang. We initiate the use of snails as aggressive periodontitis prevention materials.	2019
Semifinalist	National	<b>Paper Writing Competition</b> at Indonesian Institute of Sciences ( <b>LIPI</b> ). Top 20 out of 3500 papers in social and behavioral sciences topic.	2017
Finalist	National	<b>Industrial Automation and Robotic Competition</b> at Institut Teknologi Sepuluh Nopember (ITS).	2016
Finalist	National	<b>Paper Writing Competition</b> at Indonesian Institute of Sciences ( <b>LIPI</b> ). We built a tool to optimize industry's air pollution <b>filtration</b> using Ca(OH) <sub>2</sub> .	2016
1 <sup>st</sup> Place	National	<b>Paper Writing Competition</b> at State Polytechnic of Malang. We built a tool that utilize gravity and gear optimization to create <b>renewable electricity</b> .	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-10μs 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
  - Given 2 hours/week to do in-class teaching about the basic concepts of electric circuits and the fundamentals of electric circuit for 1<sup>st</sup>-year and 2<sup>nd</sup>-year students, respectively. I must spend ~10 hours/week for the TA-related tasks.
  - Under Dr. Eng. Achmad Munir.

## TECHNICAL SKILLS

- ML/AI** **PyTorch, Tensorflow** and **Keras**.
- Mobile Dev.** **Android Studio**
- Database** **Hive, Elasticsearch, MySQL, MariaDB, SQLite, and RocksDB.**
- Cloud Computing** **Google Cloud, Chameleon Cloud, Huawei-Cloud, and Huawei Fusion-Compute**
- 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, 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 July 13, 2022)