

Sie, Deta Dirganjaya

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RESEARCH INTEREST

Networked systems, efficiency of cloud ML systems, network performance optimization, ML for networked systems, cloud and data center networking.

EDUCATION

Dian Nuswanto University

#3 Best Innovation University in Indonesia^[1]

Bachelor of Computer Science

Sept. 2022 – Jun 2026

- Cumulative GPA: 3.91 out of 4.00
- Major GPA: 3.91 out of 4.00
- Coursework: Machine Learning (A), Artificial Intelligence (A), Computer Networks (A), Information Systems (A), Software Requirements Engineering (A), Software Engineering (A), Algorithms and Programming (A).

RESEARCH EXPERIENCE

University of Chicago - Indonesia Research Training Program

Jan. 2025 – Present

- Selected as one of the top 50 Indonesia students in computer science and related fields for an international research training program led by **Prof. Haryadi Gunawi** of **University of Chicago**.
- Covered 20+ technical papers from SIGCOMM and NSDI conferences.
- Replicated and reproduced key experiments from top-tier publications.
- Received intensive training in research methodologies, technical writing, and engagement with top-tier research communities.

Research Collaboration on Computer Vision

Oct. 2024 – Jan. 2025

- Collaborating with **Dr. Guruh Fajar Shidik** of **Dian Nuswanto Research Center** and **Edi Jaya Kusuma** from **Faculty of Health Dian Nuswanto University**
- Rectification of projective transforms in images, especially in healthcare such as X-rays often suffers from inaccuracies due to non-optimal optimization parameters, hindering precise image classification.
- Conventional methods for determining transformation parameters tend to rely on fixed heuristics, making it difficult to adjust to angular variations and distortions in the image.
- Using a novel nature-inspired optimization-based metaheuristic algorithm to adaptively search for optimal transformation parameters, significantly improves rectification accuracy.

Research Assistant

Sep. 2024 – Present

Dian Nuswanto Research Center, Dian Nuswanto University

Hybrid, Semarang

- Research assistant under **Dr. Guruh Fajar Shidik** on Artificial Intelligence (AI), Distributed Systems, Image Processing, and Distributed Computing.
- Optimizing workload distribution based on CPU and RAM utilization using the Cluster RL Q-Learning technique in an Federated Edge Cloud (FEC) environment simulated with CloudSimSDN.
- Analyzing and testing the impact of the "selective" parameter frequency in the SSVSG method on Named Entity Recognition (NER) for Indonesian disaster dataset.

Research Assistant

Sep. 2024 – Feb. 2025

AI Research and Development Group, Dian Nuswanto University

On-site, Semarang

- Research group under the Faculty of Computer Science Dian Nuswanto University, led by **Adhitya Nugraha**, focusing on Artificial Intelligence (AI).
- Developed a Virtual Smart Assistant (VSA) system integrating real-time facial recognition and emotion detection with an LLM-based chatbot, enabling users to interact seamlessly through text-to-speech technology.
- Collaborated with the Faculty of Medicine on research to prevent cyberbullying on Indonesian social media using a Multi-Modal machine learning framework.

WORK EXPERIENCE

Teaching Assistant

Sept. 2024 – Feb. 2025

AI Research and Development Group

On-Site, Semarang

- Assisting and teaching students in a career guidance class, preparing them for entering the workforce.
- Responsible for teaching Data Science classes with a total of 50+ students.
- Provided subject matter on data collection, data pre-processing, data visualization, and modeling.

Revenue Analyst

Feb. 2023 – Jul. 2023

CV Sanjaya Utama

Remote, Semarang

- Developed a system for generating product bundle promotions used by the company for product marketing using the Association method.
- Responsible for data analysis, modeling, visualization, maintenance, and development of models to support business decision-making.

PROJECTS

VSA: Virtual Smart Assistant

- A personal assistant designed to support and assist students of Dian Nuswantoro University
- Utilizing facial recognition and emotion tracking to detect students' emotional states.
- Powered by LLM-based conversational AI to provide appropriate responses based on students' emotions.
- Integrated with text-to-speech technology for a more natural and engaging communication experience.
- Contributed 1000+ LOC (3200+ lines of group code).
- Tools used: Python, JavaScript, Vite, ONNX, CUDA, Jetson Nano, DGX A100.

Optimizing ANN with Grid Search for Predicting Stunting Among Toddlers

- Investigates the application of Artificial Neural Networks (ANN) in predicting stunting, highlighting the impact of hyperparameter normalization and optimization on model accuracy and reliability.
- Utilizes SMOTE for dataset balancing and MinMaxScaler for normalization to enhance model performance.
- GridSearchCV optimization enables the ANN model to achieve 81.9% accuracy, 88.1% recall, and an 82.9% F1-score, surpassing other comparative models.
- Contributed 600+ LOC.
- Tools used: Python.

CLCM: Custom Lightweight CNN Model for low-end edge devices

- CNN-based face recognition model optimized for high efficiency and real-time performance on low-power devices.
- Outperforms well-known pre-trained models, delivering three times faster inference speed, with an average real-time detection time of 0.013 seconds.
- Efficiently utilizes up to 90% of the Jetson Nano's GPU, ensuring optimal processing power for edge computing.
- Contributed 1000+ LOC.
- Tools used: Python, ONNX, CUDA, Jetson Nano.

PRIOR PUBLICATIONS

1. **Sie, Deta Dirganjaya**, Guruh Fajar Shidik, Radhitya Marendratama, Chandra Lukita Buana, Aisyah Nuraini, Edi Jaya Kusuma, "**Metaheuristic-Based Hyperparameter Tuning for Projective Transformation Rectification Networks in Medical Image Processing**" (*Manuscript ready upon request*).
2. Maulidya Ayu Arrdiena, **Sie, Deta Dirganjaya**, Guruh Fajar Shidik, "**Analyzing the Impact of Transpose Layers on CNN-Based Deep Learning**" (*Manuscript ready upon request*).

AWARDS

Flagship Program Student of Department of Computer Science Year 2023

Aug. 2023

- Selected as one of the top 50 out of 1855 computer science students in Dian Nuswantoro University Batch 2022 Flagship Program, an acceleration program for high-achieving students.

CERTIFICATES

NVIDIA: Deep Learning Training

- Learn deep learning fundamentals including neural networks, CNNs, and RNNs.
- Enhance model accuracy with data augmentation, transfer learning, and pre-trained models.
- Deploy deep learning models efficiently using NVIDIA tools and frameworks.
- 10+ hours of hands-on, self-paced training with real-world applications.

CCNA: Enterprise Networking, Security, and Automation

- Designed and simulated enterprise networks with BGP for multi-domain routing.
- Configured advanced NAT and WAN security, including VPNs, ACLs, and firewalls.
- Automated network operations using Python, REST APIs, and Cisco DNA Center.
- Explored SDN and virtualization for modern network management.
- 140+ hours of lab practice.

CCNA: Switching, Routing, and Wireless Essentials

- Designed and simulated enterprise networks with VLANs, trunking, and inter-VLAN routing.
- Implemented redundancy solutions using STP variants and EtherChannel for reliability.
- Configured and secured wireless networks, including WLAN architectures and troubleshooting.
- Applied security best practices for device hardening and network segmentation.
- 90+ hours of lab practice.

CCNA: Introduction to Networks

- Learn networking fundamentals, including devices, media, and protocols.
- Build and configure LANs with essential network devices.
- Understand IP addressing and network services like DHCP and DNS.
- 50+ hours of lab practice.

TECHNICAL SKILLS

Programming Languages: C, C++, Python, Java, SQL.

Databases: MySQL, MongoDB, LiteSQL.

Libraries: TensorFlow, PyTorch, TensorRT, ONNX, NumPy, Ray, NetworkX, OpenCV, SciPy, MLxtend, Seaborn, Matplotlib, Pandas.

Tools: Linux, WSL, Docker, CUDA, Cisco Packet Tracer, Git, Oracle VM VirtualBox.

Misc: NVIDIA Jetson, Raspberry Pi, NVIDIA DGX A100.

REFERENCES

Prof. Haryadi Gunawi

haryadi@cs.uchicago.edu

- UChicago - Indonesia research training instructor.
- Professor at Department of Computer Science, University of Chicago.

Dr. Guruh Fajar Shidik, S.Kom, M.Cs

guruh.fajar@research.dinus.ac.id

- Research Advisor.
- Head of Dian Nuswantoro Research Center, Dian Nuswantoro University.

Adhitya Nugraha, S.Kom, M.CS

adhitya@dsn.dinus.ac.id

- Research Advisor.
- Head of AI Research and Development Group, Dian Nuswantoro University.