WILLY FITRA HENDRIA

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Skills

- Machine Learning | Computer Vision | Vision-Language | Full-Stack | English, Indonesian
- Python | Java | C++ | C# | JavaScript | HTML | CSS | SQL | NoSQL | Git | Docker | GCP | Airflow | FastAPI
- PyTorch | TensorFlow | Scikit-learn | OpenCV | spaCy | Pandas | TorchServe | TensorFlow Serving | MLflow

Experience

AI Research Engineer **Lunit** *South Korea* **07/2024 - Present**

- Designed and implemented a parallelized, rate-limited **LLM** API (Gemini) pipeline, reducing processing time from **5.6 days** to **16 minutes** for **400k+** medical text entries.
- Developed a downstream evaluation framework to benchmark **foundation models** across diverse tasks and datasets, achieving up to **5× speedup** in feature extraction and training.
- Integrated **timm** into the internal training framework and conducted benchmarking, enabling access to **1000+ models** and identifying a higher-performing model that improved the **mF1 score by 1.5%** over the baseline.
- Maintained internal **training and evaluation frameworks**, ranking among the **top contributors** in the repo.
- **Led intern hiring and mentorship** for integrating and benchmarking semantic segmentation frameworks.

AI Research Engineer **Dagyeom Co., Ltd.** *South Korea* **10/2023 - 06/2024**

- Developed a **desktop** and **web** application for the real-time anomaly detection system of video and audio data.
- Researched and deployed a state-of-the-art **anomaly detection** model (from CVPR) into an existing system.
- Implemented **multithreading** with **ONNX** in C# and Python, resulting in a **20x improvement** in inference time.
- Developed a novel approach for **unsupervised anomaly detection**, which led to a first-author publication.

AI Research Engineer **Tricubics** *South Korea* **04/2023 - 09/2023**

- Improved multi-model ML system **FPS by 80%** via **multi-GPU** inference with **multithreading**.
- Built and deployed an **object detection** model for real-time video stream data, achieving a **35%** gain in mAP.
- Built and deployed a state-of-the-art **pose estimation** model (published in 2023), resulting in **26%** AP gain.
- Built and deployed an **image classification** model, resulting in **33%** improvement in the mF1 score.
- Improved a knowledge-based **action recognition** algorithm by integrating **object tracking** and **sensor fusion** techniques, resulting in a considerable **24%** enhancement in accuracy.

Graduate AI Researcher **VLI Lab (Sejong University)** *South Korea* **03/2021 - 03/2023**

- Produced the highest research output in the lab by writing two first-authored papers, filing two patents, and leading teams in completing **deep learning**-based projects, such as **object detection** and **video captioning**.
- Proposed and developed a novel **graph neural network**-based **video captioning** using **PyTorch**, which achieved state-of-the-art results.
- Reproduced several **machine learning** papers, such as **federated learning**, **object detection**, **video captioning**, and **video retrieval**.

Machine Learning Engineer **Detik Network** *Indonesia* **11/2019 - 10/2020**

- Built **Scikit-learn**-based **classification**, **regression**, and **clustering** models for AI use cases in online media articles, such as **tagging** and **categorization** of articles, **recommendation engine,** and **customer segmentation**.
- Improved preprocessing time of 20 million data from 50 minutes to 3 minutes by converting the **Spark**-based code to **Google BigQuery**.
- Built monitoring and inference pipeline of **Google AutoML** model for batch prediction by using **Apache Airflow**.

Software Engineer **Works Applications Co., Ltd.** *Singapore, Japan* **01/2016 - 09/2018**

- **Led a 3-member team** to develop a UI component library, including implementation, code reviews, and testing.
- Improved build time of a large project from more than 1 hour to less than 20 minutes.
- Designed and developed the **front-end** and **back-end** of an e-commerce system using **Java Spring** framework.

Education

Master of Science **Sejong University** *South Korea* **03/2021 - 02/2023**

- Major in Intelligent Mechatronics Engineering and Convergence Engineering for Intelligent Drone (Dual Degree). **Thesis:** Video Captioning Based on Graph Neural Networks Using Action Knowledge

Nanodegree **Udacity** *Online* **11/2019 - 02/2020**

- Program in Machine Learning Engineer. **Capstone Project:** Cat Breed Image Classification Using CNN [link]

Master of Science (Incomplete) **The University of Bonn** *Germany* **04/2019 - 09/2019**

- Major in Computer Science. **Courses**: Advanced Deep Learning for Graphics, Data Mining and Knowledge Discovery, Robot Learning, Humanoid Robotics, Artificial Life

Bachelor of Science **Bandung Institute of Technology** *Indonesia* **08/2011 - 09/2015**

- Major in Computer Science. **Relevant Courses:** Artificial Intelligence, Machine Learning, Software Engineering.

Projects

- **Lightning Hydra Boilerplate**: Deep learning experiment template using PyTorch Lightning + Hydra [link] (**2025**)
- **VisualTorch**: A tool for visualizing PyTorch-based neural network architectures [link] (**2024**)
- **MSVD-Indonesian:** A benchmark for multimodal video-text tasks in Indonesian [link] (**2023**)
- **Graph Transformer**: An unofficial implementation of Graph Transformer in PyTorch [link] (**2023**)
- **CLIP4Caption**: An unofficial implementation of CLIP4Caption in PyTorch [link] (**2022**)

Selected Publications

- Multi-model anomaly detection for industrial inspection with dynamic loss weighting and soft-hard features loss, Neural Computing and Applications (**Q1**), Springer [link] (**2025**)
- A multilingual multimodal data hub and benchmark suite for Southeast Asian languages, EMNLP [link] (**2024**)
- Action knowledge for video captioning with graph neural networks, JKSU-CIS (**Q1**), Elsevier [link] (**2023**)
- Non-contact supervision of COVID-19 breathing behaviour with FMCW radar and stacked ensemble learning model in real-time, Transactions on Biomedical Circuits and Systems (**Q1**), IEEE [link] (**2022**)
- Combining transformer and CNN for object detection in UAV imagery, ICT Express (**Q1**), Elsevier [link] (**2021**)

Patents

- Knowledge distillation for graph-based video captioning, KR, **Granted**, No. 102799596 [link] (**2025**)
- Transfer of tactile data in teleoperation system, KR, **Granted**, No. 102611269 [link] (**2023**)

Others

- Contributed to several open-source projects, including **Anomalib**, **MMPose**, and **SEACrowd** **(2023 - 2024)**
- Served as the Sejong University **representative** for the Indonesian Students Association in Korea (**2021 - 2023**)
- Spoke as an **invited speaker** on “Object Detection for Drone Imagery” in the digiXed Webinar (**03/2023**)
- Awarded the **AWS Scholarship,** top 300 in the Amazon Web Services DeepRacer Challenge (**11/2019**)
- Achieved a **Gold Medal** in an intra-university chess team competition at Olympiad VIII KM-ITB 2015 (**02/2015**)