Project Portfolio: Jeayoung Jeon

MLOps/DevOps and AI Engineer (Updated at 2024-11-30)

> NOTE
> My name is Jeayoung Jeon [전제영], and I'm an MLOps engineer in Seoul, South Korea. I also specialize in:

- 🐳 Developing **MLOps (APIs, Pipelines)** and **AI/LLM Platforms** in cloud-native environments.
- 👷 Building **Hybrid Kubernetes Clusters** for **High Availability** and **GPU Cost Reduction**.
- 👨‍🔬 Contributing decisions for **MLOps/DevOps** using backgrounds in **ML, Computer Vision, Automotive**.

I'm always open to new challenges and opportunities for various fields including **Automotives** and **AI**. Please feel free to contact me. If you're looking for my brief resume and works, please see my **resume** (https://jyje.live/profile/resume) and **portfolio** (https://jyje.live/works) .

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🏠 : **https://jyje.live**

in : **LinkedIn: jyje** (https://www.linkedin.com/in/jyje)

: **Github** (http://github.com/jyje)

: **StackShare** (https://stackshare.io/jyje/jyje-pro-stack)

Work 💼

Mar 2024 – Nov 2024 (9 Months)

👨‍🔧 Intermediate Software Engineer [책임연구원] at MAXST (https://maxst.com/ENG/main)

Roles: Lead MLOps/DevOps Engineer at Technology Division, MAXST

- MLOps Developing ML APIs, data pipelines, and AI Platforms for research team using open sources.
- LLMOps Building chatbots using self-hosted RAG+LLM systems for internal documents.
- SRE Site reliability engineering for web services. Service reliability engineering for ML workloads.

Jan 2021 – Feb 2024 (3 Years and 2 Months)

👨‍🔧 Software Engineer [선임연구원] at MAXST (https://maxst.com/ENG/main)

Roles: Associate Researcher and DevOps Engineer at Technology Division, MAXST

- Algorithm Research Reviewing computer vision algorithms in state-of-art papers and implementing prototypes
- Hybrid Clusters Building hybrid clusters with AWS EKS and on-premise Kubernetes for digital twin project
- DevOps Building on-premise clusters and data pipelines for company's inbound/outbound projects

Mar 2012 – Aug 2020 (8 Years and 6 Months)

👨‍🔬 Graduate Student Researcher in Computer Vision at POSTECH (https://eee.postech.ac.kr/)

Roles: Ph.D Integrated Student at Department of Electrical Engineering, POSTECH

- Computer Vision Research on hyperparameters for accurate and efficient computer vision algorithms
- Automotives Principal computer vision technologies for autonomous driving including ADAS and SLAM; Participated in the development of the Korean government's ADAS research projects
- FPGA Efficiently implemented computer vision and machine learning algorithms with real-time parallel matrix processing; SoC-type GPU/NPU accelerator

Projects

Jan 2024 – Oct 2024 (10 Months)

👷 Widearth: Digital Twin & AR Content Platform at Widearth, MAXST (https://widearth.world)

Roles: Lead ML/Infra Roles ~ MLOps/DevOps + ML Backend + SRE [contrib 75%]

- DevOps & SRE IaC, GitOps, CI/CD Pipelines, Monitoring, Logging, Notifications, Multi-Deployment, Emergency Response
- Hybrid Clusters Public Cloud + On-Premise Kubernetes, API Gateway Pattern, Dynamic VMs, GPU Cost Optimization
- ML Workloads ML APIs, ML Pipelines, Data Lakes, Dockerizing, Model CI/CD

Results: Service Launch ~ Small Team, Full Features, More Availability, Less Cost

- **Launch** Launched/Operated a platform as **1 infra engineer** with 15 people, 8 developers in 10 months.
- **Low Cost** Reduced cloud costs by **15M KRW (70%)** by using hybrid clusters for **300+ maps**.
- **Robust Infra** Achieved **96% availability/year and 14d downtime** using hybrid clusters and damage control.

Skills: Skill Stack for Project Widearth

AWS EKS | Kubespray | Python/FastAPI | Argo Workflows | Argo CD | Bitbucket Pipelines | Karpenter

Jan 2024 – Jun 2024 (6 Months)

👨‍🍳 MLOps: On-Premise MLOps with Open Source Projects at MAXST (https://maxst.com/ENG/main)

Roles: Lead MLOps Engineer ~ Planning + VoC + PoC + ML Workloads/Infra + Operation [contrib 90%]

- Kubeflow Integrated Argo Workflows; AutoML, Distributed Training, Model Registry; 16 GPUs Acceleration
- JupyterHub Integrated JupyterHub with IDE; Remote GPU Notebook, 4 GPUs Acceleration
- VectorDB Milvus, ChromaDB, RAG+LLM Chatbot
- ML Infra Setup CI/CD, NAS, Data Lake, Image Registry for ML Workloads

Results: Improved research environment and resource management ~ Increased availability and capacity by merging resources and automating management.

- **Improved Infrastructure** Consolidated servers managed by researchers into k8s to stable infra capacity and stability; Decision-making using PoC.
- **Research Environment** Expanded from VoC of 2 researchers, gradually increased users to 10. Resolved technical debt through continuous MLOps upgrades.
- **GPU Utilization** GPU usage increased by **3 times** and successfully commercialized as a result of performing over **800** AutoML experiments

Skills: Skill Stack for On-Premise MLOps

Kubeflow | Katib | Training Operator | Model Registry | JupyterHub | Argo Workflows | Milvus | ChromaDB | Ollama | Open WebUI | Grafana Stack | TensorBoard

Dec 2022 – Dec 2023 (13 Months)

👮 DevOps: Hybrid Clusters for Internal/External Projects at MAXST (https://maxst.com/ENG/main)

Roles: DevOps Engineer ~ Hybrid Clusters + CI/CD + Chatbot + Data Pipelines [contrib 50%]

- Hybrid Clusters Public Cloud, On-Premise Kubernetes, Multi-Cluster, API Gateway, IaC, GPU Operator
- CI/CD Public CI Platform, On-Premise Custom CI, GitOps CD, ChatOps for Results/Issues
- Pipelines Data Pipelines for ML Research, Production Pipelines for ML Inference

Results: Hybrid Cluster Initiation ~ Increased On-Premise Resource Utilization + Reduced Public Resource Costs + DevOps Culture Propagation

- **Cost Reduction** Maintained public availability while reducing costs by **50%** compared to pure cloud infrastructure using on-premises cost-effectiveness.
- **Resource Utilization** Utilized **90% of idle on-premises resources**, provided multi-cluster for prototyping in other departments
- **DevOps Culture** Introduced cloud-native development environment. Propagated DevOps culture including app modernization and CI/CD. Decision support through monitoring.

Skills: Skill Stack for DevOps and Hybrid Cluster

Kubernetes | AWS EKS | IaC | Ansible | Terraform | CI/CD | Bitbucket Pipeline Runners | Argo CD | Argo Workflows | Python/FastAPI | Python/Bolt (Slack)

Jan 2021 – Dec 2022 (2 years)

📸 Computer Vision Engineer at MAXST (https://maxst.com/ENG/main)

Roles: Associate Researcher ~ Algorithm research for digital twin systems and prototyping [contrib 50%]

- Digital Twins Digital twin system implementation using algorithms for converting perspective and 360 images to 3D space.
- AR/XR Camera calibration and AR/XR prototype development for various smart glasses
- Automation Development of automated pipelines for data acquisition and analysis
- Military Service Engaged in position related to graduate school majors and performed alternative military service.

Results: Development of computer vision algorithms and construction of digital twin systems

- **Digital Twins** Research and development of Visual-SLAM and ICP algorithms for digital twin systems
- **Automation** Development of automated pipelines for data acquisition and analysis

Skills: Skill Stack for computer vision research

Computer Vision | Visual-SLAM | SfM | ICP | Python | OpenCV | .NET/C# | Unity

Jan 2012 – Aug 2020 (8 Years)

👨‍🎓 Computer Vision and ADAS Researcher (Integrated Program) at POSTECH (https://eee.postech.ac.kr/)

Roles: Graduate Student Researcher ~ Computer Vision and ADAS Research [full-time]

- 2018-2020 *Computing and Control Engineering Lab. (Prof. SH, Han)*

  Digital Twins and Simultaneous Localization and Mapping (SLAM) Research
  - Visual-SLAM Research using Multiple Cameras for Autonomous Driving
  - Prototyping of Digital Twins for ADAS and SLAM
  - Virtual Visual-SLAM for Real-World Environments

- 2012-2018 *Advanced Signal Processing Lab. (Prod. H, Jeong)*

  Advanced Driver Assistance Systems (ADAS) and Edge Computer Vision Research
  - High-Performance, Efficient FPGA Implementation of ADAS
  - High-Speed Algorithm Development for Traffic Signs and Road Terrain Detection
  - Research on Stereo Vision Algorithm for 3D Depth Estimation
  - Stereo Vision-based Online Calibration for Vehicle Cameras
  - Optimization Algorithm Research for Computer Vision using Cost Aggregation Table

Results: Proejcts and Research Papers ~ Studying on Automotive Simulations in Virtual Environments and ADAS On-Edge.

- **Digital Twins** Virtual Visual-SLAM for Real-World Environments
- **Edge ADAS** Research of ADAS including Traffic Sign Detection & Lane Terrain Detection with FPGA

Skills: Skill Stack for Computer Vision and ADAS Research

Computer Vision | Digital Signal Processing | Automotives | Autonomous Driving | Advanced Driver Assistance Systems (ADAS) | Finite Programmable Gate Array (FPGA) | Traffic Sign Detection | Lane Terrain Detection | MATLAB/Simulink | C/C++

Skills

NOTE

Here are my skills and highlighted items are industry-ready.

MLOps & LLMOps :

Ollama | OpenAI API | RAG | AutoRAG | Kubeflow | AutoML Katib | Training Operator | JupyterHub | Data Pipelines

DevOps & SRE :

Kubernetes | On-Premise | AWS EKS | GCP GKE | Hybrid Clusters | ARM64 | IaC | Kubespray | Terraform | Ansible | Istio | Grafana Stack | Karpenter

CI/CD/CT/CT :

Argo Projects | Bitbucket Pipelines | GitHub Actions | Self-Hosted Runner | Kaniko | Buildah | Locust | Litmus

ML Backend :

Python/FastAPI | Ollama | Milvus | PostgreSQL | Redis

Computer Vision :

Automotives | SLAM | PyTorch | OpenCV | FPGA

UI/UX :

Slackbot | Python/FastUI | .NET/MAUI | .NET/WPF | Unity

FinOps & BizOps :

Kubecost | Continuous BI

Programming languages :

Python | .NET/C# | C/C++ | MATLAB

Education

Mar 2012 – Aug 2020

Master's Degree (Integrated Program) in Department of Electrical Engineering, Signal Processing & Computer Vision from Pohang University of Science and Technology (POSTECH) with GPA of 3.2/4.3

- Thesis: Virtual Visual-SLAM for Real-World Environments, 2020

Mar 2008 – Feb 2012

Bachelor's Degree in School of Electronic Engineering, Electronic Communication from Kumoh National Institute of Technology (kit) with GPA of 4.3/4.5

- Thesis: A Study on a Visible Light Communication using LED in Under-water Environment, 2011

Awards

May 2014

Altera Design Contest 2014, Excellence Prize from Intel-Altera Korea

[System] FPGA, Vision-Based Driver Support Navigation System

May 2014

Best Poster Session in Workshop from KYUTECH-POSTECH Joint Workshop

[Poster] Iterative Polygon Detection using Harris Corner Space Method for Finding Traffic Signs

May 2013

Altera Design Contest 2013, 2nd Prize from Intel-Altera Korea

[System] FPGA, Vision-Based Traffic Sign Recognition System

Feb 2012

Highest Honors in Undergraduate School from Kumoh National Institute of Technology

[Summa Cum Laude] Highest Honors in Undergraduate Electronic Engineering School

Jan 2012

NAVER Power KiN 2011 (https://m.site.naver.com/1y6qP) **from NAVER**

[Activity] Knowledge Export in `Electronics Engineering, Mathematics and Programming fields`. Active 2009-2011, Selected as a MVP in 2012 / Total number of answers 723, Selection ratio 98.1%

Publications

Jul 2020, POSTECH, Thesis (1st)

🎓 **Virtual Visual-SLAM for Real-World Environments** (http://postech.dcollection.net/common/orgView/200000341295) **by Jeayoung Jeon**

Nov 2014, ISVC, Advances in Visual Computing, 10th International Symposium (2nd)

📄 **Cost Aggregation Table: Cost Aggregation Method Using Summed Area Table Scheme for Dense Stereo Correspondence** (https://doi.org/10.1007/978-3-319-14249-4_78) **by JeongMok Ha, Jeayoung Jeon, GiYeong Bae, SungYong Jo & Hong Jeong**

Oct 2014, ICCAS, 14th International Conference on Control, Automation and Systems (1st)

📄 **Polygonal symmetry transform for detecting rectangular traffic signs** (https://doi.org/10.1109/ICCAS.2014.6987934) **by Jea Young Jeon, JeongMok Ha, Sung Yong Jo, Gi Yeong Bae, Hong Jeong**

Apr 2011, ICS-KIEE (1st, equivalent)

🎓 **A Study on a Visible Light Communication using LED in Under-water Environment** (https://www.dbpia.co.kr/Journal/articleDetail?nodeId=NODE01951197) **by Daehee Lee, Ki-Sung Park, Jea-Young Jeon, Yeon-Mo Yang**

Certifications

Nov 2024 (Expired in Nov 2027)

GitHub Foundations (https://www.credly.com/badges/876fa6b3-0b27-4ddf-bbb3-a9d853918566) **from GitHub**

Sep 2024 (Expired in Sep 2026)

CAPA: Certified Argo Project Associate (https://www.credly.com/badges/ee42c2c7-2ac3-411f-8713-cc26cbec8022) **from The Linux Foundation**

Jun 2024 (Expired in Jun 2026)

CKAD: Certified Kubernetes Application Developer (https://www.credly.com/badges/9e072a3a-57d0-403e-8bef-5831d618675c) **from The Linux Foundation**

Mar 2024 (Expired in Mar 2027)

CKA: Certified Kubernetes Administrator (https://www.credly.com/badges/d944bde7-222a-4ce5-b4e6-4e6c84df0ef8) **from The Linux Foundation**

Interests

DevOps Culture :

Coop First, Tech Next | Automate as Possible | Internal Development Platform

Cost Efficiency :

AMD-to-ARM Transition | Hybrid Clusters

Home Clusters :

Raspberry Pies | Personal RAG | Live Demo

Languages

Korean :	Native
English :	Working Proficiency