Minji Lee

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Education

PURDUE UNIVERSITY West Lafayette, IN
Ph.D. in Technology, Vision Transformer May 2021 – August 2025
Dissertation: End-to-End Instance Segmentation Pipeline for Eastern Red Cedar Tree Classification from UAV Imagery

PURDUE UNIVERSITY West Lafayette, IN
M.S. in Computer and Information Technology, Multi-Agent Robotics August 2019 – May 2021
Thesis: Intelligent Self-Adapting Robotic Apparel with MQTT-Based Sensor Feedback for Comfort Adaptation

SEJONG UNIVERSITY Seoul, South Korea
B.F.A. and B.S. in Computer Science and Industrial Design March 2012 – February 2017

PURDUE UNIVERSITY West Lafayette, IN
Visiting Scholar, Image Processing and Data Analytics June 2016 – August 2016

Experience

PURDUE UNIVERSITY West Lafayette, IN
Research Assistant in M2M Lab - Team Leader May 2025 – Current
- Built and deployed production-oriented UAV instance segmentation pipelines by fine-tuning foundation models (SAM) in PyTorch, enabling continuous validation, monitoring, and iterative updates
- Developed scalable ML analytics workflows in Python such as NumPy and integrated inference optimization tools such as TensorRT/ONNX, improving real-time deployment efficiency
- Supported end-to-end MLOps practices by containerizing vision pipelines with Docker and leveraging CI/CD-style

PURDUE UNIVERSITY West Lafayette, IN
Teaching Assistant for C Programming August 2024 – May 2025
- Taught advanced C programming, covering algorithm design, memory management, and time complexity
- Led interactive lab sessions with live coding demonstrations and real-world applications, enabling students to debug complex recursive functions and optimize algorithm efficiency

PURDUE UNIVERSITY West Lafayette, IN
Research Assistant in M2M Lab September 2023 – May 2024
- Developed a generative facial model on the COCO dataset optimized for low-latency text-prompted generation, enabling interactive control of facial attributes
- Led a cross-functional team of developers and researchers to design prompt-driven interfaces and benchmark latency–accuracy tradeoffs for real-time generative applications

LG INNOTEK Seoul, South Korea
Research Aide Intern in AI Big Data Solution June 2023 – August 2023
- Developed and optimized CNN-based inspection and monitoring models for advanced manufacturing workflows in semiconductor and electronics production environments
- Deployed real-time analytics models through a CI/CD-enabled MLOps platform on AWS EC2, supporting scalable production-level monitoring and automated pipeline delivery
- Queried large-scale manufacturing sensor data using SQL, performing anomaly trend analysis and KPI reporting

ARGONNE NATIONAL LABORATORY Lemont, IL
Research Aide Intern in Software Development and Robotics May 2022 – August 2022
- Automated ML environment setup and deployment on NVIDIA Jetson Nano edge nodes using Ansible, enabling reliable on-device model execution for distributed sensor systems
- Contributed to large-scale edge-to-cloud AI platform deployment for the NSF-funded SAGE project by developing infrastructure documentation aligned with microservices-based architectures and scalable cloud operations

ARGONNE NATIONAL LABORATORY Lemont, IL (Virtual)
Research Aide Intern in Software Development May 2021 – August 2021
- Integrated Node-RED into IBM platform, leveraging Docker to streamline edge-to-cloud pipeline deployment
- Implemented edge AI for real-time sensor fusion in a distributed computing system, enabling efficient environmental monitoring and automated anomaly detection accuracy by 15%

PURDUE UNIVERSITY West Lafayette, IN
Teaching Assistant in STAT 501 Course August 2020 – May 2021
- Guided students through core statistical concepts in a theory-driven course emphasizing ANOVA models, hypothesis testing, variance decomposition, and experimental design
- Built and demonstrated statistical visualizations and reporting workflows using SAS and R, developing dashboard-style outputs to communicate insights effectively to diverse audiences
- Supported experimental design and statistical testing frameworks applicable to product A/B experimentation

PURDUE UNIVERSITY West Lafayette, IN
Research Advisor in M2M Lab August 2019 – May 2020
- Mentored junior researchers by translating complex model results into actionable insights for cross-functional collaborators, strengthening communication across research and engineering teams using Python, R, and Tableau
- Developed data-driven dashboards and visual analytics tools to support decision-making across multiple levels of leadership and technical stakeholders

Invited Keynotes and Presentations

PURDUE UNIVERSITY West Lafayette, IN
Graduate Women in Business Session of AI and Deep Learning October 2024
- Delivered a keynote on AI-driven decision-making tools, communicating complex ML concepts to both technical and non-technical audiences
- Translated computer vision model outputs into actionable insights for stakeholders, supporting real-world ecological and industry decision-making

PURDUE UNIVERSITY West Lafayette, IN
Military Research Institute Workshop of Machine Learning Application June 2024
- Presented evaluation methodologies (exploratory data analysis, confusion matrix, classification metrics) to support operational decision making in defense-related ML systems
- Performed model evaluation and visualization using Pandas, scikit-learn metrics, and Matplotlib reporting dashboards

MINISTRY OF SCIENCE AND ICT - MSIT Seoul, South Korea
Information and Communication Technology Career Talk December 2023
- Collaborated with government AI mentors to design and lead mentoring sessions for undergraduate researchers, demonstrating ownership and follow-through

Skills & Interests

Programming: Python3, C, Java, bash scripting, SQL | **Language:** Korean, English, Japanese
Frameworks & Tools: PyTorch, scikit-learn, NumPy, Pandas, Docker, Kubernetes
Machine Learning: Computer Vision, Model Training & Evaluation, Hyperparameter Tuning
Mathematics: Linear Algebra, Probability, Statistics, Optimization
Certifications: The Recreational UAS Safety Test (TRUST, 2024), Neural Networks and Deep Learning (Coursera, 2024), EBEC Programming in Python (Purdue, 2022)