Chanyoung **Jung**

Research Assistant

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Summary

Highly motivated Master's student in Computer Science, **recipient of the MobiSys 2025 Best Paper Award**, specializing in on-device AI systems optimized for mobile/edge platforms. Expertise spans ML inference optimization through heterogeneous/parallel computing and efficient utilization of mobile processors for Vision Foundation Models and 3D object detection on mobile/edge devices. Seeking to leverage advanced skills in optimizing complex applications for resource-constrained environments.

Research Areas and Interests

Mobile & Edge Systems	Real-time Systems, Heterogeneous Computing, Energy-efficient Systems
On-device AI	Neural Processing Units (NPUs) Optimization, DNN Inference Optimization, HW-SW Co-design
Artificial Intelligence	Vision Transformer, Vision Foundation Models, Efficient AI
Computer Vision	Depth Estimation, Semantic Segmentation, 3D Object Detection, Gaussian Splatting

Experience

Mobile Embedded Systems Lab. — *Seoul, South Korea*

Research Assistant — *Jan. 2024 - Present*

- Participated in 3 projects that were accepted at top-tier mobile systems conferences, with 1 ongoing project
  - Designed and co-developed a heterogeneous computing system (ARIA) for real-time vision AI on Qualcomm Snapdragon SoCs, sustaining 30 FPS while boosting model accuracy up to +72%
  - Designed and developed a high-performance, multi-view 3D object detection pipeline (Panopticus) for autonomous systems on NVIDIA Jetson SoCs, achieving a 2.1× speedup and +62% mAP
- Awarded **Best Paper Award** at MobiSys 2025 by ARIA
- Authored 3 top-tier mobile systems papers, including 1 first-author paper (MobiSys '25) and 1 co-authored papers (MobiCom '24)
- Awarded a government fellowship, receiving approximately $9,000 for one year
- Served as a teaching assistant for Operating Systems and Systems Programming courses

Mobile Embedded Systems Lab. — *Seoul, South Korea*

Undergraduate Research Assistant — *Dec. 2022 - Dec. 2023*

- Conducted two semesters of graduation research on "Real-time Omnidirectional 3D Object Detection on Edge Devices"
  - Developed an end-to-end baseline system for real-time omnidirectional 3D object detection during the first semester
  - Optimized critical bottleneck in image preprocessing using CUDA, achieving a 37.0x reduction in processing time (vs. naive Python baseline) and an inference rate of 17 FPS (57% of 30 FPS target)
  - Enhanced system performance by 47% to reach 25 FPS in the second semester, integrating additional CUDA-accelerated modules and adaptive logic
  - Contributed foundational work that was subsequently expanded into the Panopticus project, accepted at MobiCom 2024

Education

Yonsei University — *Seoul, South Korea*

M.S. in Computer Science and Engineering — *Mar. 2024 - Now*

- Mobile Embedded Systems Group, Advised by Prof. Hojung Cha
- Expected graduation: Feb. 2026

Yonsei University — *Seoul, South Korea*

B.S. in Computer Science and Engineering — *Mar. 2018 - Feb. 2024*

- GPA: 4.24/4.50, Rank, 6/106, Graduated with High Honors

Skills

Programming	Python, C/C++, Java
ML Inference Frameworks	ONNX, LiteRT(Tensorflow Lite), TensorRT
ML Model Frameworks	PyTorch, LibTorch, MMDetection3D
Build tools	Bazel, CMake, Gradle
GPU Frameworks	CUDA, OpenCL, OpenGL
NPU Frameworks	Qualcomm AI Engine Direct (QNN) SDK
Edge Devices	Nvidia Jetson Series (Orin, Xavier, Nano)
Mobile Devices	Qualcomm Snapdragon SoCs

Projects

ARIA *2024*

Project Leader

- Skills: Android, Qualcomm AI Engine Direct (QNN) SDK, LiteRT, ONNX
- Designed a heterogeneous computing pipeline that distributes Vision Foundation Model (VFM) inference workloads across GPU and NPU based on processors' performance characteristics.
- Developed an inference engine for Snapdragon SoCs that schedules VFM inference based on scene dynamics, device motion, and GPU performance variations due to thermal throttling.
- Achieved sustained performance of 30 FPS with up to 72% improvement of prediction accuracy compared to baselines.

Panopticus *2024*

Project Member

- Skills: Linux, PyTorch, LibTorch, TensorRT, CUDA
- Developed a BEV 3D object detection system featuring dynamic selection of optimal inference paths per camera view, deployed on Jetson edge GPUs.
- Acheived 2.1x speed up with up to 62% improvement of prediction accuracy compared to baselines.

Honors & Awards

2025	**Best Paper Award**, MobiSys 2025	*Anaheim, California, US*
2024	**Academic Prize**, Graduated with High Honors, Yonsei University	*Seoul, South Korea*
2023	**Grand Prize**, Software Capstone Design, Yonsei University	*Seoul, South Korea*
2023	**Academic Prize**, Honors, Yonsei University	*Seoul, South Korea*
2019	**Academic Prize**, Honors, Yonsei University	*Seoul, South Korea*
2019	**Academic Prize**, High Honors, Yonsei University	*Seoul, South Korea*
2018	**Academic Prize**, Highest Honors, Yonsei University	*Seoul, South Korea*

Publications

ARIA: Optimizing Vision Foundation Model Inference on Heterogeneous Mobile Processors for Augmented Reality *MobiSys '25*

Chanyoung Jung, Jeho Lee*, Gunjoong Kim, Jiwon Kim, Seonghoon Park, and Hojung Cha*

- ACM Annual International Conference on Mobile Systems, Applications, and Services
- Awarded **Best Paper Award**

Panopticus: Omnidirectional 3D Object Detection on Resource-constrained Edge Devices *MobiCom '24*

Jeho Lee, Chanyoung Jung, Jiwon Kim, and Hojung Cha

- ACM Annual International Conference on Mobile Computing and Networking