Jeho Lee

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RESEARCH INTERESTS

- **On-Device AI**

- **Mobile and Embedded Systems**

EDUCATION

Yonsei University, Seoul, Korea   Mar 2020 – Present
Ph.D. Candidate in Computer Science (Advisor: Hojung Cha)

Ajou University, Suwon, Korea   Mar 2015 – Feb 2020
B.S. in Computer Engineering   GPA: 4.0/4.5

PUBLICATIONS

12. ARIA: Optimizing Vision Foundation Model Inference on Heterogeneous Mobile Processors for Augmented Reality
   <u>Jeho Lee</u>*, Chanyoung Jung*, Gunjoong Kim, Jiwon Kim, Seonghoon Park, Hojung Cha
   ACM International Conference on Mobile Systems, Applications and Services (**MobiSys 2025**)
   <u>**Best Paper Award**</u>

11. Towards Accurate, Adaptive, and Real-time Machine Perception on Resource-constrained Platforms
   <u>Jeho Lee</u>
   ACM International Conference on Mobile Systems, Applications and Services (**MobiSys 2025 Rising Star**)

10. Panopticus: Omnidirectional 3D Object Detection on Resource-constrained Edge Devices
   <u>Jeho Lee</u>, Chanyoung Jung, Jiwon Kim, Hojung Cha
   ACM International Conference on Mobile Computing and Networking (**MobiCom 2024**)

9. MAUI: Enhancing Assistive Web Interaction through GUI Abstraction
   <u>Jeho Lee</u>, Seonghoon Park, Yoonha Cha, Hojung Cha
   Under Review, IEEE Transactions on Human-Machine Systems (**THMS**)

8. Vega: Fully Immersive Mobile Volumetric Video Streaming with 3D Gaussian Splatting
   Gunjoong Kim*, Seonghoon Park*, **<u>Jeho Lee</u>**, Chanyoung Jung, Hyungchol Jun, Hojung Cha
   ACM International Conference on Mobile Computing and Networking (**MobiCom 2025**)

7. EOS: Energy-Optimized Super-Resolution on Mobile Devices for Live 360-Degree Videos
   Seonghoon Park, Minchan Kim, Hyejin Park, **<u>Jeho Lee</u>**, Jiwon Kim, Hojung Cha
   ACM International Conference on Mobile Computing and Networking (**MobiCom 2025**)

6. Ember: Task Wakeup Sequence–Based Energy Optimization for Mobile Web Browsing
   Seonghoon Park, Jiwon Kim, **<u>Jeho Lee</u>**, Hojung Cha
   ACM SIGBED International Conference on Embedded Software (**EMSOFT 2025**)

5. SecureRide: Detecting Safety-threatening Behavior of E-Scooters Using Battery Information
   Jiwon Kim, Geon Kim, **<u>Jeho Lee</u>**, Thiemo Voigt, Hojung Cha
   ACM SIGBED International Conference on Embedded Software (**EMSOFT 2025**)

4. Poster: Mixture of Class-aware Experts for Efficient AIoT Inference
   Hyemin Jeong, **Jeho Lee**, Seunghyeok Jeon, Hojung Cha
   ACM International Conference on Mobile Systems, Applications and Services (**MobiSys 2025 Poster**)

3. Vulture: Cross-Device Web Experience with Fine-Grained Graphical User Interface Distribution
   Seonghoon Park, **Jeho Lee**, Yonghun Choi, Hojung Cha
   IEEE Conference on Computer Communications (**INFOCOM 2024**)

2. OmniLive: Super-Resolution Enhanced 360° Video Live Streaming for Mobile Devices
   Seonghoon Park, Yeonwoo Cho, Hyungchol Jun, **Jeho Lee**, Hojung Cha
   ACM International Conference on Mobile Systems, Applications and Services (**MobiSys 2023**)

1. Crow API: Cross-device I/O Sharing in Web Applications
   Seonghoon Park, **Jeho Lee**, Hojung Cha
   IEEE Conference on Computer Communications (**INFOCOM 2023**)

PROJECTS

Development of On-device DNN Inference System for Real-time 3D Perception with Mobile 360-degree Camera
National Research Foundation of Korea (NRF)   May 2024 – Present

- Designed a BEV (bird's-eye-view) 3D object detection system that dynamically selects optimal inference paths per camera view, achieving $2.1\times$ latency reduction and 62% higher accuracy under 33 ms real-time constraints on NVIDIA Jetson devices, implemented with PyTorch, TensorRT, and CUDA (MobiCom '24)
- Built a mobile 3D perception testbed with 360-degree camera, LiDAR, and IMU sensors; created a nuScenes-compatible dataset across urban scenes, including sensor synchronization, calibration, and annotation: `github.com/jeho-lee/Panoptic3D`
- Initiated and led the project as a primary student researcher; secured $540 K in national funding by designing a 3-year research plan and leading a team of 10 graduate students

Task Relation Graph Prediction based on RNN
Samsung Electronics, Republic of Korea   Mar 2023 – Feb 2024

AWARDS AND HONORS

Best Paper Award, ACM MobiSys 2025

SIGMOBILE Student Travel Grant, ACM MobiSys 2025

Rising Star, ACM MobiSys 2025

PATENTS

3. I/O Sharing Device and Method
   Seonghoon Park, **Jeho Lee**, and Hojung Cha
   Patent No. 10-2823808 (Republic of Korea; granted Jun. 18, 2025)

2. Method for Omnidirectional 3D Object Detection, Program Performing the Method, and Computing Device Executing the Program
   Jeho Lee, Chanyoung Jung, Seonghoon Park, Hyungchol Jun, and Hojung Cha
   Patent Pending, Patent Application No. 10-2024-0120347 (Republic of Korea; filed Sep. 04, 2024)

1. System and Operating Method for Cross-Device Experiences using In-Browser Virtual Proxy
   Seonghoon Park, **Jeho Lee**, and Hojung Cha
   Patent Pending, Patent Application No. 10-2024-0112156 (Republic of Korea; filed Aug. 21, 2024)

Skills

Programming: Python, C/C++, Java, JavaScript
Languages: English (Professional Working), Korean (Native)
Frameworks: Android, Qualcomm Neural Processing SDK (QNN), TensorRT, PyTorch, TensorFlow Lite, MMDetection3D, ROS, Node.js
Hardware Platforms: Qualcomm Snapdragon SoCs, NVIDIA Jetson SoCs

Experience

CSIRO, Pulenvale, Australia   Summer 2019
Undergraduate Research Intern – Data61 Robotics and Autonomous Systems Group

- Developed a real-time fish detection system using TensorFlow to monitor coral trout in fish tanks
- Trained and evaluated Faster R-CNN and SSD MobileNet models on a custom-labeled dataset; optimized configurations to reduce overfitting and improve mAP

Teaching Experience

Guest Lecturer, Yonsei University   Spring 2024
On-Device Intelligence for 3D Perception: Challenges and Innovations

Teaching Assistant, Yonsei University   Spring 2023
Operating Systems (CSI3101)

Teaching Assistant, Yonsei University   Fall 2022
Introduction to Computer Science (CSI2106)

Mentoring Experience

Dasol Yoon, Master student at Yonsei Univ., working on an on-device AI project	2025 – Present
Jaehee Kim, Master student at Yonsei Univ., working on an on-device AI project	2025 – Present
Hyemin Jeong, Master student at Yonsei Univ., a MobiSys 2025 poster	2025 – Present
Gunjoong Kim, Master student at Yonsei Univ., a MobiSys 2025 paper	2024 – Present
Chanyoung Jung, Master student at Yonsei Univ., a MobiSys 2025 paper	2024 – Present
Chanyoung Jung, Undergraduate student at Yonsei Univ., a MobiCom 2024 paper	2022 – 2023
Software Capstone Design, Yonsei Univ.	Spring 2021, Fall 2021, Spring 2022, Spring 2023, Fall 2023

Academic Services

Student Volunteer, MobiSys 2024