

Jongmin Lee

POSITION	Ph.D Candidate Department of Computer Science and Engineering Pohang University of Science and Technology (POSTECH)
CONTACT INFORMATION	Computer Vision Laboratory, E2 302, Dept. of CSE, POSTECH 77 Cheongam Rd, Nam-gu, Pohang, Gyeongbuk, 37673, Republic of Korea Phone: (+82) 54 279 2931 Mobile: (+1) 650 664 7642 , (+82) 10 8242 3070 e-mail: ljm1121@postech.ac.kr Homepage: blog , google scholar , dblp , github
RESEARCH INTERESTS	<p>My research interests mainly focus on developing novel models and algorithms to address practical challenges in deploying artificial intelligence systems to various real-world application domains. I am currently engaged in the following topics:</p> <ul style="list-style-type: none">• Visual correspondence: wide-baseline matching, semantic matching, camera pose estimation, novel-view synthesis, 3D reconstruction, point cloud registration, text-to-3D generation, and foundation models for 3D vision.• Representation learning: equivariant representation learning, self-supervised learning, multi-modal learning, geometric deep learning, and diffusion models for visual tasks. <p>The application domains of interest include, but are not limited to, visual geometry/3D vision (e.g., autonomous driving, visual SLAM, and multi-view geometry), computational photography (e.g., image restoration and enhancement, burst photography, and camera ISP), and AR/VR technologies (e.g., eye tracking, gaze estimation, pose estimation, and neural rendering).</p>
EDUCATION	<p>Pohang University of Science and Technology (POSTECH), Pohang, Korea <i>Ph.D Cand., Dep. of Computer Science and Engineering (CSE)</i> Sep 2018 – Aug 2024</p> <ul style="list-style-type: none">• Advisor: Prof. Minsu Cho <p>Pohang University of Science and Technology (POSTECH), Pohang, Korea <i>B.S., Dep. of Industrial and Management Engineering (IME)</i> <i>B.S., Dep. of Computer Science and Engineering (CSE)</i> Mar 2013 – Aug 2018</p> <ul style="list-style-type: none">• Double Major
INDUSTRY EXPERIENCE	<p>Meta Reality Labs., Burlingame, California, U.S.A. <i>Ph.D Research Scientist Intern</i> Jul 2023 – Oct 2023</p> <ul style="list-style-type: none">• Manager: Survi Kyal, Mentor: Fengting Yang• Succeed to achieve KPIs of Eye Tracking production model of Arcata project (XR Eyes)• Improve gaze estimation accuracy for Meta Quest using a single POR camera through invariant feature learning for a personalized, explainable ML Eyes <p>Fast campus., Seoul, South Korea <i>Computer Vision Lecturer</i> Mar 2022 – Aug 2022</p> <ul style="list-style-type: none">• Lecturing on computer vision from classical to state-of-the-art deep learning approaches.• Curriculum Sheet: Google Spreadsheet <p>Vuno Inc., Seoul, South Korea <i>Front-end Developer</i> Jun 2017 – Aug 2017</p>

- Developed the client/front-end interface for an AI-based software for diagnosis of major abnormalities from a chest X-ray.

INTERNATIONAL
PUBLICATIONS

Min Jung Lee, **Jongmin Lee**, Sanghyun Kim, Sunghyun Cho, Minsu Cho, “Base Frame Selection on Dynamically Exposed Burst,” in *Image Processing and Image Understanding (IPIU)* 2024.

Jongmin Lee, Byungjin Kim, Seungwook Kim, Minsu Cho, “Learning Rotation-Equivariant Features for Visual Correspondence,” in *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2023.

Jongmin Lee, Byungjin Kim, Minsu Cho, “Self-Supervised Equivariant Learning for Oriented Keypoint Detection,” in *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2022.

Jongmin Lee, Yoonwoo Jeong, Minsu Cho, “Self-supervised Learning of Image Scale and Orientation Estimation,” in *Proceedings of the 32nd British Machine Vision Conference (BMVC)*, 2021.

Jongmin Lee, Yoonwoo Jeong, Seungwook Kim, Juhong Min, Minsu Cho, “Learning to Distill Convolutional Features Into Compact Local Descriptors,” in *Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (WACV)*, 2021.

Juhong Min, **Jongmin Lee**, Jean Ponce, Minsu Cho, “Learning to Compose Hypercolumns for Semantic Visual Correspondence,” in *Proceedings of the European Conference on Computer Vision (ECCV)*, 2020.

Juhong Min, **Jongmin Lee**, Jean Ponce, Minsu Cho, “SPair-71k: A Large-scale Benchmark for Semantic Correspondence,” arXiv preprint, 2019.

Juhong Min, **Jongmin Lee**, Jean Ponce, Minsu Cho, “Hyperpixel Flow: Semantic Correspondence with Multi-layer Neural Features,” in *Proceedings of the IEEE/CVF International Conference on Computer Vision (ICCV)*, 2019.

Paul Hongsook Seo, **Jongmin Lee**, Deunsol Jung, Bohyung Han, Minsu Cho, “Attentive Semantic Alignment with Offset-Aware Correlation Kernels,” in *Proceedings of the European Conference on Computer Vision (ECCV)*, 2018.

RESEARCH
PROJECTS

Kakao Brain Nov. 2021 - Jul. 2023
Efficient equivariant representation learning in deep neural networks.

Samsung Advanced Institute of Technology (SAIT) Nov. 2022 - Jul. 2023
Non-uniformly exposed burst image restoration using robust base frame selector. (ISP Project)

Samsung Advanced Institute of Technology (SAIT) Nov. 2021 - Oct. 2022
Burst image enhancement in an extremely degraded environment by noise, blur and shift. (ISP Project)

Samsung Advanced Institute of Technology (SAIT) Nov. 2020 - Oct. 2021
Motion-aware burst image enhancement under extremely low-light conditions. (ISP Project)

PROFESSIONAL
ACTIVITIES

Reviewer of international conferences

Computer Vision and Pattern Recognition (CVPR) 2022, 2023, 2024
International Conference on Machine Learning (ICML) 2024
International Conference on Learning Representations (ICLR) 2024
Neural Information Processing Systems (NeurIPS) 2023
International Conference on Computer Vision (ICCV) 2023
European Conference on Computer Vision (ECCV) 2022, 2024
Asian Conference on Computer Vision (ACCV) 2024
International Conference on 3D Vision (3DV) 2022
British Machine Vision Conference (BMVC) 2021
Winter Conference on Applications of Computer Vision (WACV) 2021, 2022, 2023, 2024
International Conference on Machine Vision Applications (MVA) 2021, 2023
International Conference on Pattern Recognition (ICPR) 2020

Reviewer of international journals

IEEE Transactions on Pattern Analysis and Machine Intelligence (2023, 2024)
International Journal of Computer Vision (2023, 2024)
IEEE Transactions on Image Processing (2022, 2023)
Pattern Recognition (2022, 2023)
The Visual Computer (2022)

Teaching assistant

Artificial Intelligence & Data Science (CSED537) @ POSTECH	Spring semester 2023
Introduction to Deep Learning (CSED490W) @ POSTECH	Fall semester 2019
POSCO AI expert training course	July 2019 – Aug 2019
Automata & Formal Languages (CSED341) @ POSTECH	Fall semester 2018

HONOURS AND
AWARDS

Qualcomm AI Innovation Fellowship Finalist, *Qualcomm Technologies Inc.*, 2023.

BK21 outstanding paper award, POSTECH CSE, 2022.

Global Ph.D fellowship, *National Research Foundation of Korea (NRF)*, 2019 – Now.

Excellent research award, *Undergraduate Research Program, POSTECH Computer Science Engineering Dep.*, 2018.

SK Hynix scholarship, *SK Hynix Fellowship Program, POSTECH*, 2015.

INVITED TALKS

“Hyperpixel Flow: Semantic Correspondence with Multi-layer Neural Features“, *ICCV 2019 Paper Day with Naver*, Hotel Andaz Gangnam, Seoul, Korea, October 2019.

“Where is semantic correspondence? - The general image matching problem in deep learning era“, *Hyundai Motors AIR Lab(Artificial Intelligence Research Lab) seminar*, Pohang, Korea, September 2019.

“Semantic Alignment - Find Semantic Dense Correspondence,” *Naver corp.*, Pangyo, Korea, October 2018. [Youtube link \(Korean\)](#)

LANGUAGE SKILLS Korean(native), English(fluent)

REFEREES *Available on request.*