Nayeon Kim

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Work Experience

Samsung Advanced Institute of Technology (SAIT), Korea - *AI Researcher*   *Mar 2019 – Present*
- Developing a generative model for industrial process automation by predicting time-series data.
- Developed computer vision models for high-level semantic and geometric understanding of road scenes
  : Online HD Map construction (NeurIPS '24), 3D lane detection (ICASSP '23)

Korea Electronics Technology Institute (KETI), Korea - *Research Intern*   *Dec 2017 – Oct 2018*
- Developed a computer vision model for monocular 3D perception: Monocular depth prediction (KSAE '18)

Publications

Unveiling the Hidden: Online Vectorized HD Map Construction with Clip-Level Token Interaction and Propagation	*NeurIPS 2024*
Nayeon Kim*, Hongje Seong*, Daehyun Ji, Sujin Jang	
D3DLD: Depth-aware Voxel Space Mapping for Monocular 3D Lane Detection with Uncertainty	*ICASSP 2023*
Nayeon Kim*, Moonsub Byeon*, Daehyun Ji, Dokwan Oh	
Unsupervised Depth Prediction and Camera Motion Estimation in a Dynamic Environment	*KSAE 2018*
Nayeon Kim, MinGyu Park, Youngbae Hwang	

Education

Kookmin University (KMU)   *Mar 2015 – Feb 2019*
B.S. in Computer Science, Automotive Software Design   Advisor: Prof. Yongsoo Joo
- GPA: 4.19/4.5 (Graduated **Summa Cum Laude**)

Patents

Method and Apparatus with Vehicle Driving Control Hongje Seong, Nayeon Kim, Sujin Jang, Daehyun Ji	*US-Application No. 18/936,286* filed on 11/04/2024
Method and Apparatus with Vector Map Learning and Generation Nayeon Kim, Sujin Jang, Dae Ung JO	*US-Application No. 18/605,119* filed on 03/14/2024
Method and Apparatus with Lane Generation Nayeon Kim, Moonsub Byeon, Dokwan Oh, Daehyun Ji	*US-Application No. 17/862,821* filed on 07/12/2022
Method and Apparatus for Determining Slope of Road Using Side View Camera of Vehicle Moonsub Byeon, Nayeon Kim, Daehyun Ji	*US-Application No. 17/685,917* filed on 03/03/2022

Awards & Honors

CEO Commendation Award ('23.4Q DS Vision Awards) *Samsung Electronics*	*2024*
Business Division Commendation Award (1H 2022) *Samsung Electronics*	*2022*
Grand Award (1st Place), Cloud Programming World Cup (CPWC) *FORUM8*	*2017*
Kookmin University Academic Excellence Scholarship *KMU*	*2015 - 2017*

Projects

(SAIT) **Automated Semiconductor Cross-Section Analysis**   *Jan 2025 – Present*
- Developing an automated system using generative models to analyze semiconductor cross-sectional images and automatically determine optimal stopping points during the milling process.

(SAIT) **Large Language Model Alignment Tuning**   *June 2024 – Dec 2024*

- ○ Conducted research on alignment tuning methods to enhance LLM performance and safety for internal model development.

(SAIT) **Online Vectorized HD Map Construction** *Jan 2023 – May 2024*

- ○ Developed an algorithm of vectorized HD map construction that can predict road information in challenging driving road scenes.
- ○ Developed an algorithm that effectively constructs vectorized HD map using only a camera, by applying knowledge distillation from the multi-modal fusion of lidar and camera.

(SAIT) **Lane Detection** *Sep 2019 – Dec 2022*

- ○ Developed an algorithm to predict 3-dimension lane information from a single image that is robust to various driving environments.
- ○ Developed a 2-dimension lane fitting algorithm that can be implemented in real vehicles.

(KETI) **Unsupervised Depth Prediction** *Dec 2017 – Oct 2018*

- ○ Developed an algorithm to improve the performance of the depth map by predicting the movement between images through the flow network.

(KMU) **International Student Car Competition** *Jan 2018 – May 2018*

- ○ Developed a real-time lane detection algorithm for a 1/4 scale autonomous vehicle, validated through simulation in real-road environments.

(KMU) **Embedded Software Contest** *June 2017 – Nov 2017*

- ○ Developed embedded software that can be implemented in mini cars to enable autonomous driving on the track.

(KMU) **GM PACE Collaboration and Innovation Challenge** *Jan 2017 – July 2017*

- ○ Developed multi-level driving automation system that predicts driver behavior via an eye-tracker, validated in both a driving simulator and a real-world vehicle.

Service

Conference Reviewer: *NeurIPS 2025*

Skills

Program Languages: Python, C++, C
Frameworks: PyTorch, ROS
Languages: Korean(Native), English