Nayeon Kim

RESEARCHER, SAMSUNG ELECTRONICS

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Research Interest

Computer Vision, Machine Learning, Multimodal Learning, Embodied AI

Work Experience

Samsung Advanced Institute of Technology (SAIT) *Suwon, Korea*
Researcher *Mar 2019 - Current*
- Research topics : 1) Computer Vision 2) Deep Learning 3) Autonomous Driving

Korea Electronics Technology Institute (KETI) *Seongnam, korea*
Research Intern *Dec 2017 - Oct 2018*
- Advisor: Dr. MinGyu Park
- Research topics : 1) Computer Vision 2) Deep Learning

Education

Kookmin University *Seoul, Korea*
B.S. IN COMPUTER SCIENCE AND ENGINEERING & **B.S.** IN AUTOMOTIVE SOFTWARE DESIGN *Mar 2015 - Feb 2019*
- *GPA:* *4.19/4.5* (***summa cum laude***)

Publications

CONFERENCE

2024

Unveiling the Hidden: Online Vectorized HD Map Construction with Clip-Level Token Interaction and Propagation
Nayeon Kim, Hongje Seong, Daehyun Ji, and Sujin Jang
Neural Information Processing Systems (*NeurIPS*), Dec 2024 [PDF]

2023

D3DLD : Depth-aware Voxel Space Mapping for Monocular 3D Lane Detection with Uncertainty
Nayeon Kim, Moonsub Byeon, Daehyun Ji, and Dokwan Oh
IEEE International Conference on Acoustics, Speech and Signal Processing (*ICASSP*), June 2023 [PDF]

2018

Unsupervised Depth Prediction and Camera Motion Estimation in a Dynamic Environment
Nayeon Kim, MinGyu Park, and Youngbae Hwang
The Korean Society of Automotive Engineers Annual Autumn Conference (*KSAE*), Dec 2018

Patents

Method And Apparatus Of Controlling Driving Of Vehicle And Vehicle
Hongje Seong, Nayeon Kim, Sujin Jang, and Daehyun Ji
Korea - Application No. P202400900377

Learning Method Of Generating A Vectorized Map, And Method And Apparatus Of Generating Vectorized Map

Nayeon Kim, Sujin Jang, and Daeung Jo

US - Application No. 18/605119

Method and apparatus with lane generation

Nayeon Kim, Moonsub Byeon, Dokwan Oh, and Daehyun Ji

US - Application No. 17/862821 (**Selected as a strategic patent at Samsung Electronics**)

Projects

(*June 2024 - Present / SAIT*) Large Language Model Alignment Tuning
  • Research on methods of fine-tuning to optimize the LLM's ability.

(*Jan 2023 - May 2024 / SAIT*) Online Vectorized HD Map construction
  • 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.
  • Developed an algorithm of vectorized HD map construction that can predict road information in challenging driving road scenes.

(*Sep 2019 - Dec 2022 / SAIT*) Lane Detection
  • Developed a 2-dimension lane fitting algorithm that can be implemented in real vehicles.
  • Developed an algorithm to predict 3-dimension lane information from a single image that is robust to various driving environments.

(*Dec 2017 - Oct 2018 / KETI*) Unsupervised Depth Prediction
  • Developed an algorithm to improve the performance of the depth map by predicting the movement between images through the flow network.

(*Jan 2018 - May 2018 / Kookmin University*) International College Student Creative Car Competition - Autonomous Driving
  • Developed a robust lane detection algorithm for real-road environments.

(*June 2017 - Nov 2017 / Kookmin University*) Embedded Software Contest - Autonomous Driving
  • Developed embedded software that can be implemented in mini cars to enable autonomous driving on the track.

Awards & Honors

2024	**CEO Commendation Award**	*Samsung Electronics*
	'23.4Q DS Vision Awards	
2022	**Business Division Commendation Award**	*Samsung Electronics*
	First Half of 2022 Infinite Exploration Award	
2017	**Grand Award (1st Place)**	*FORUM8*
	Cloud Programming World Cup (CPWC)	
2017	**4th Place Award**	*Kookmin University*
	Capstone Design Competition	
2017	**Academic Excellence Scholarship**	*Kookmin University*
	All Semesters	
2016	**4th Place Award**	*Kookmin University*
	Interdisciplinary Club Exhibition	
2016	**KT Creative and Innovative Leader Scholarship**	*Kookmin University*
	Fall Semester	
2016	**Academic Excellence Scholarship**	*Kookmin University*
	Spring Semester	
2015	**Academic Excellence Scholarship**	*Kookmin University*
	Fall Semester	

Skills

Program Languages	Python, C, C++
Frameworks	PyTorch, ROS
Languages	Korean(Native), English
Certificates	Best Reviewer(Samsung Electronics), Associate Architect(Samsung Electronics)