Seongjun Choi

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EDUCATION

Mar.2025 – Feb.2027 **Yonsei University** Seoul, Korea
M.S. Degree in Electrical and Electronic Engineering
Image and Video Pattern Recognition Lab (MVP Lab)
Advisor: Prof. Sangyoun Lee
GPA - /4.3

Mar.2019 – Feb.2025 **Kyung-Hee University** Yongin, Korea
Bachelor of Software Convergence (Robot & Vision Track)
GPA 3.6/4.5

RESEARCH INTEREST

Autonomous Driving Robotics 3D Computer Vision NeRF Real World Problem

RESEARCH EXPERIENCES

Oct.2024 – **MVP Lab** Yonsei University, Korea
- Undergraduate Research Intern
- Keywords: 4D Gaussian Splatting

Mar.2024 – Oct.2024 **Visual AI Lab** Kyung-Hee University, Korea
- Undergraduate Research Intern
- Keywords: NeRF with Real World (Low Resolution, Glare Surface, ...)

Jan.2024 – Feb.2024 **Autonomous Intelligence Lab** ETRI, Korea
- Research Intern, Autonomous Driving Intelligence Research Section
- Keywords: Instance Segmentation, Mono Depth Estimation, Pseudo LiDAR, Optimization
- Improve 3D OD performance with Depth Estimation of Interests Based on Instance Segmentation
- 4% performance improvement + About 45ms per frame

Aug.2021 – Aug.2023 **V2X Researcher** PentaSecuritySystems, Korea
[Project] Local Station(LS) (23.02.-23.08.)
- Implement communication of Local Station service, that shares object streaming data detected by CCTV
[Project] Misbehavior Detection(MBD) (22.03. - 23.01.)
- Research methodologies for LMBD and GMBD & Development of Misbehavior Report(MBR) Receiver
[Project] V2X Air Application (21.08.-22.03.)
- Research V2X Communication Service Using C-ITS Message & Implement events rules on V2X Device

PUBLICATIONS

[1] “InfoFusion Controller: Informed TRRT Star with Mutual Information based on Fusion of Pure Pursuit and MPC for Enhanced Path Planning”, 2025 International Conference on Consumer Electronics(ICCE) (Oral, 1st Author)
[2] “Non-Glare-NeRF: To prevent unwanted glare: A Comparative Study”, 2024 Korea Software Congress (KSC) (1st Author)
[3] “Codebook-NeRF: Improving NeRF resolution based on codebook”, 2024 Korea Software Congress (KSC) (1st Author)
[4] “Exploring the Role of View Direction Settings in Depth Estimation with NeRF: A Comparative Study”, 2024 Korea Computer Congress(KCC) (1st Author)
[5] “[ITSK-00135] V2X Misbehavior and Misbehavior Report Specification” 2022 ITS-K

AWARDS

Feb. 2025	**1st Prize**, Korean Institute of Information Scientists and Engineers, Korea Software Congress 2024
Nov. 2024	**1st Prize (Robot & Vision Track)**, Kyung-Hee University, Software Convergence Conference 2024
Sep. 2023	**1st Prize**, Wrtn Prompthon, Wrtn Technologies
Jul. 2022	**Excellence Award,** "Autonomous Mini-Drone Aviation Competition", MathWorks
Dec. 2020	**3rd Prize, Famous Award**, SW Festival 2020, Kyung-Hee University
Aug. 2019	**1st Prize**, Convergence Design Competition for Self-Driving Vehicles, Sungkyunkwan University

PROJECTS

1. Non-Glare NeRF: To prevent unwanted glare (Poster) Mar.2024 – June.2024
- Mitigate Glare with Inpainting
- Use LiDAR and RGB cameras on iPhones to build Data Engine + Depth Evaluation Dataset

2. Exploring the Role of View Direction Settings in Depth Estimation with NeRF (Poster) Mar.2024 – June.2024
- Directional Datasets: Datasets taken at five separate viewpoints (front, back, right, left, top)
- Review experimental results between the Directed and All Viewed Datasets

3. Faster VirConv: lightweight and faster 3D Object Detection Mar.2024 – June.2024
- Architectural Analysis and Lightweight Method for VirConv Models
- Apply a variety of lightweight algorithms, including Knowledge Distillation, Pruning, and Quantization
- Finally, 6.2% faster with ROI Tuning and Quantization

4. AuTURBO RDSim: Robo Delivery Simulator Mar.2024 – May.2024
- Visualization of Rviz sensors and implementation of debugging dashboards
- Configuring Map Environments and Applying Dynamic Obstacle SFM Models

5. Drivable Area Detection: 3D LiDAR + Multi Camera Fusion Sep.2023 – Dec.2023
- Analysis nuScenes Dataset & Sensor Calibration
- Road Plane Segmentation: RANSAC & Removal Object Plane & Removal Shoulder Outside Plane

6. Woowa Bros. Robot Delivery Challenge Sep.2023 – Oct.2023
- Indoor driving based on navigation: 3D maps can be converted into an occupancy map for navigation
- Outdoor driving based on GPS: Implementation of path tracking through pure pursuit compared to GPS location
- Module integration(Sequence Manager): Focus on reusability, reliability and ease of maintenance

7. Kookmin University Self-Driving Software Competition May.2023 – July.2023
- Robot FSM (Limited State Machine) environment development and code integration
- Development of Vision-related modules such as stop line recognition
- Simplify the Object Detection process with ROSbag utilization and Yolo

ADDITIONAL INFORMATION

Military Services

Alternative Military Service in PentaSecuritySystems (Aug.2021 - July.2023)

Activities

OROCA AuTURBO Manager: Interested in Autonomous Driving (Mar.2023 - May.2024)
Open Source Contribution Academy (May.2023 - Dec.2023)
KHU MAKERS Manager (Mar.2020 - Aug.2021)

Relevant Coursework

Robotics & Sensor (Reinforcement Learning, 3D Data Processing, Future Robot Prog-)
AI (Advanced Deep Learning, Explainable AI, NLP, Machine Learning in Practice, Numerical-Analysis Prog-, Deep Learning)
Programming (Web-Python Prog-, Object-Oriented Prog-, Data Structure, Algorithm Analysis)
Math (Calculus, Linear Algebra, Probability Random Processing, Signal & System)