

Jongseo Choi

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in JS Choi

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Employment History

- Nov 2020 – **Thordrive (Korea)**, Working as a senior R&D engineer.
Major works:
1) Development of a jerk-minimized velocity planning module using a spatial-temporal map for autonomous vehicles
2) Autonomous shuttle & taxi service launch for the Korean Navy in Jinhae
3) Development of an evaluation system for multi-agent autonomous vehicles in Carla simulation
4) Development of an open-space planner using Hybrid A* and Kinodynamic-RRT
5) Development of an occlusion-aware risk assessment system for autonomous vehicles which is published in RA-L (2nd author)
6) Development of a trajectory optimization module for autonomous vehicles which is published in arXiv (1st author; submitted in T-ITS in Nov 2023)
7) Development of a multi-agent path planning module for autonomous mobile robot (AMR)
- Sep 2019 – Aug 2020 **IAV GmbH (Germany)**, Working as an intern in Autonomous Driving Department
Major works: Research and development of lane change intention detection module using machine learning (e.g. SVM, MLP, LSTM)
- Jan 2015 – Mar 2018 **Hyundai Mobis (Korea)**, Working as an assistant for QC/QA in ADAS Department

Education

- Oct 2018 – Sep 2020 **M.Sc. Automotive Software Engineering, Technical University of Chemnitz (Germany)**
Major works:
1) Implementation of a communication system with Raspberry Pi and Arduino (skills: OSI model, embedded C)
2) Studied machine learning (e.g. CNN, RNN, RL), multicore systems (e.g. OpenMP, PThread, CUDA programming), and automotive software (e.g. AUTOSAR, CAN system)
- Mar 2008 – Jan 2015 **B.Sc. Electronic Engineering, Chungbuk National University**
Major works:
1) Development of a linetracer robot using an infrared sensor, a DC motor, and an Atmega microcontroller (skills: low-pass filter, PWM, PID controller, embedded C)
2) Development of a mini-wheel chair controlled by a wireless helmet using an accelerometer and gyro sensor (skills: pose estimation using Kalman filter, Bluetooth, embedded C)

Research Publications

Articles

- 1 **J. Choi**, H. Chin, H. Park, D. Kwon, S. Lee, and D. Baek, "Safe and efficient trajectory optimization for autonomous vehicles using b-spline with incremental path flattening," *arXiv preprint arXiv:2311.02957*, 2023. [URL: https://arxiv.org/abs/2311.02957](https://arxiv.org/abs/2311.02957).
- 2 H. Park, **J. Choi**, H. Chin, S.-H. Lee, and D. Baek, "Occlusion-aware risk assessment and driving strategy for autonomous vehicles using simplified reachability quantification," *IEEE Robotics and Automation Letters*, 2023. [DOI: 10.1109/LRA.2023.3329627](https://doi.org/10.1109/LRA.2023.3329627).
- 3 D. Kwon, **J. Choi**, H. Chin, and D. Baek, "The design of a test scenario for verifying multi-agent based edge connected urban autonomous driving service," *Autumn Annual Conference of IEIE*, pp. 462–464, 2022. [URL: https://www.dbpia.co.kr/Journal/articleDetail?nodeId=NODE11195535](https://www.dbpia.co.kr/Journal/articleDetail?nodeId=NODE11195535).
- 4 **J. Choi**, "Lane change intention detection (lcid) of other vehicles using interactive relationships of surrounding multiple objects," *Technical University of Chemnitz & IAV GmbH*, 2020.
- 5 **J. Choi**, "Development and evaluation of lane change intention detection module in adtf with real-time capability," *Technical University of Chemnitz & IAV GmbH*, 2019.
- 6 **J. Choi**, "Development of a mini-wheelchair controlled by a wireless helmet using an accelerometer and gyro sensor," *Chungbuk National University*, 2014.

Skills

Languages	■ Korean (Native), English (Professional working proficiency), German (Elementary proficiency)
Coding	■ C/C++, Python, Java, ROS, Linux, Git
Algorithms	■ Planning/Control (Search algorithms, MPC, LQR, Kalman filter, Gaussian Process), Optimization (QP, NLP, L-BFGS), Machine Learning (SVM, CNN, RNN, RL, etc)
Misc.	■ Embedded (Raspberry Pi, ATmega, Arduino), HW (DC motor, infrared, gyro, accelerometer sensor), Carla, Vehicle kinematics, CAN, Academic research, and \LaTeX

Miscellaneous Experience

Awards and Achievements

- 2019 ■ **Merit scholarship**, 3,600 Euro from the committee of the Faculty of Computer Science, the president of Chemnitz University of Technology.
- 2014 ■ **Merit scholarship**, 5,000,000 won from scholarship foundation of Taekwang.
- 2012 ■ **Merit scholarship**, 1,000,000 won from Chungbuk National University.

Certification

- 2009 ■ Driver's license 1st class; Regular.