Jongseo 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 real-time trajectory planner module for on-road autonomous driving in dynamic scenarios.

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, PThead, 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.
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.
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.
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 Univercity*, 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 Univercity.

Certification

2009	Driver's license 1st class; Regular.