Yufa You Motion Planning Engineer

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http://youyufa.github.io

Education

Harbin Institute of Technology Harbin, China
M.E. in Control Engineering 2021 - 2023
- Advisor: Prof. Zhao Linhui
- Research area: Planning and Control of Autonomous Vehicle

Dalian Maritime University Dalian, China
B.E. in Automation 2018 - 2022
- GPA: 3.80/4.00, Rank: 5/127.

Work experience

BYD Ltd. Autonomous Driving Unit Shanghai, China
Senior Motion Planning Engineer 2021 - present

Momenta Tech Ltd. Suzhou, China
Planning Algorithm Intern 2018 - 2022

Publications

1. **Yufa You**, Linhui Zhao, et al. A Hybrid Trajectory Planning Strategy for Intelligent Vehicles with Collision Avoidance. *Chinese Control Conference*, 2022.

Projects at work

4WD Parking System of BYD Yangwang U8/U7 and Denza Z9GT
BYD Ltd. Autonomous Driving Unit 2023.11 - present

- Develop path planner for 4WD vehicles(E4 Platform), which have 'Rotation' gear
- Develop framework of parking task, include preplan/env/decider/predict/etc.
- Make developing and testing tools with python/ros/ros2/gtest/QT/etc.
- Optimize prediction and nudging strategy for dynamic obstacles
- Design a multi-thread planning framework to fix functional safety risks

Autonomous Valet Parking Research
BYD Ltd. Autonomous Driving Unit 2024.04 - present

- Design reference path optimizer algorithms with kinematic and collision constraints

APA(Autonomous Parking Asistant) Project for BYD Seal and Denza N7
BYD Ltd. Autonomous Driving Unit 2023.07 - 2023.11

- Design path planner for parallel/vertical/obilque slot and adapt to different module

Momenta HNP(Highway Navigation Pilot) Product
Momenta Tech Ltd. 2022.11 - 2023.03

- Implement CiLQR path optimizer
- Optimize crossroad and ramp processing

Projects on campus

Motion Planning with Milliken Dynamic Model
Master's Thesis Research in Harbin Institute of Technology 2021.06 - 2023.06

- Describe vehicle dynamic constraints using MMM(Milliken Moment Method) and DPS(Depth-first Search)
- Design on-road and openspace planning method with dynamic constrains
- Implemented the above research with C++ on SOP(NVIDIA ORIN)

Curling Robot for Winter Olympics Exhibition
Harbin Institute of Technology 2021.09 - 2021.12

- Design game strategies based on curling rules and control curling robot with ROS

Maritime Robot Research in AitLab
Dalian Maritime University 2019.12 - 2020.7

- Design a 6 DOF shipborne stability platform and implement STM32 MCU control
- Design a ship-climbing rescue robot and implement C51 MCU control

NXP Cup Intelligent Car Race 2019
Dalian Maritime University 2018.09 - 2029.12

- Processing images and electromagnetic sensor information to achieve tracking, obstacle avoidance, crossing, and roundabout processing, with a speed of up to 3m/s
- Optimize entry and exit conditions of elements and control strategies to significantly improve code reliability

Awards and Honors

- **Best Student Talent**, BYD Ltd. Autonomous Driving Unit 2023.12
- **The 1st Prize Scholarship**, Harbin Institute of technology 2022.05
- **Outstanding Talent**, Harbin Institute of technology., 2022.05
- **The 2nd National Prize**, NXP Cup Intelligent Car Race 2019., 2020.03
- **The 2nd National Prize**, CUMCM(Mathematical Modeling Contest)., 2019.10
- **The 3rd National Prize**, CMC(Chinese Mathematical Competition)., 2019.10
- **The 1st Prize Scholarship**, Dalian Maritime University., 2019.4
- **The Innovation Scholarship**, Dalian Maritime University., 2019.4

Skills

Languages: Chinese, English.

Programming: C++, Python, MATLAB, Shell, Markdown, Latex, RegExp.

Tool: Git, Docker, ROS/ROS2, Linux, CMake, Protobuff, DDS, Bazel, GTest

Planning: Ceres, Eigen, OSQP, IPOPT, Hybrid A*, RRT, Lattice, iLQR, Apollo, Voronoi, MPC, PID, Spline. More details in: [**my tech blog: motion-planning**]

Control: LQR, PID, MPC, DWA