

## Senior Autonomous Controls Engineer in Path/Motion Planning at NIO, USA

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Senior Autonomous Controls Engineer – Path/Motion Planning

SAN JOSE, CA - AUTONOMOUS DRIVING, FULL-TIME

Team charter:

The Advanced Technologies and Autonomy team is responsible for delivering highly available, high quality systems to enable NIO's Autonomous driving vehicles. Our mission is to provide the next generation of hardware, software and algorithmic solutions. This includes but not limited to sensing, compute, storage as well as vehicle controls and safety system compute.

What the team works on:

- Autonomy hardware and software architecture
- Design, development, integration, and test of autonomous compute and sensing hardware
- Mass storage and Event Data Recorders
- Vehicle and Safety Controller HW and related functions
- Environment and Sensor modeling and simulation
- Autonomy AI and Controls
- Autonomy R&D Tools
- Autonomy compute and sensing HW and SW redundancy
- Sensing, GPS and IMU hardware, software, and integration
- Autonomy compute communication (sensing, compute, and controller inter-ECU communication)

You will be part of a team working towards NIO's autonomous vehicle vision. You will be architecting and contributing to system that processes input from a variety of vehicle sensors, evaluates possible vehicle strategies/trajectories, and automates the safe control of the vehicle.

Responsibilities

Excellent knowledge and practical application of path planning, motion planning, optimization and (real-time) search algorithms (A\*, RRT(\*), CC-RRT, ... etc..)

Excellent knowledge on optimization techniques with emphasis on real-time optimization.

Excellent knowledge on predictive control logic and algorithms (MPC, NMPC, RHC, ...etc)

Knowledge of control theory and applications

Knowledge on vehicle state estimation

Familiarity with vehicle modeling and dynamics, motion prediction, and kinematics

A practical, creative, hands-on approach to apply the theory required to solve autonomous

driving related problems

Passion for product excellence and quality. Strong desire to create high quality product, working as an integral part of a highly capable team

Desire to work in a fast-paced, production oriented environment

Collaborate with other teams to ensure a smooth, robust implementation

Self-driven/enthusiastic/motivated to solve challenging engineering problems

#### Qualifications

MS with at least 2 years of work experience or PhD in computer science, applied mathematics, aerospace, mechanical, robotics, or related field(s).

#### Preferred Qualifications

Hands-on experience in robotic and/or autonomous vehicle system design and implementation

Proficient in high level design and analysis

Experience in low level software implementation

Knowledge of ROS

Experience working in an automotive, aerospace, etc. environments

Experience working in a larger team

Experience with C/C++ software development

#### About NIO (NEXTEV USA, Inc d/b/a NIO)

The automotive industry is on the cusp of a profound change. Our goal is to lead the way into the future with smart, electric and autonomous vehicles. Our aspiration is make life better for millions of people around the world. Our vision is to give people their time back to be everything they want to be. We are confident that we will be the first to deliver the next generation experiences in the car of the future. We believe that your car will be the smartest device you own and we are designing for the best user experience from the wheels up. Want to be a part of this? Join us!

NIO is committed to a policy of equal employment opportunity. We recruit, employ, train, compensate, and promote without regard to race, color, age, sex, ancestry, marital status, religion, national origin, disability, sexual orientation, veteran status, present or past history of mental disability, genetic information or any other classification protected by state or federal law.

#### About NIO

Our mission is to shape a joyful lifestyle for our users by offering smart, premium electric vehicles and providing the best user experience. We are a global company with world-class research and development, design and manufacturing centers in Shanghai, Beijing, San Jose, Munich, London and nine other locations. NIO U.S. is our Global Advanced Technology Center and North American headquarters.

Our global company has achieved many great milestones such as:

- Securing the inaugural Formula E Drivers' Championship title in 2015
- Unveiling the fastest electric car in the world, the EP9, and setting a lap record for an electric vehicle at the Nürburgring Nordschleife in 2016
- Unveiling its vision car, EVE, in 2017
- Setting a new world speed record for an autonomous vehicle with the EP9 at the Circuit of the Americas in 2017
- Launching the ES8, a seven-seat high performance electric SUV, on December 16 with deliveries slated to begin in 2018.

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NIO US is an E-Verify employer.