

# CARSON LOYAL

+1(423) 779-7204 ◇ Nashville, Tennessee

[carsonloyal@gmail.com](mailto:carsonloyal@gmail.com) ◇ [linkedin.com/in/carson-loyal](https://www.linkedin.com/in/carson-loyal) ◇ [github.com/carTloyal123](https://github.com/carTloyal123)

## OBJECTIVE

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Driven by a desire to make a positive impact on the world, I am a software engineer seeking opportunities to advance new technologies that benefit humanity. Open to exploring various software engineering fields, I am committed to continuous learning and pushing myself to contribute meaningfully to teams, bringing purpose and value to every project.

## EDUCATION

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**Master of Science, Mechanical Engineering**, Auburn University Aug 2021 - Dec 2023

**GPA:** 4.0. Activities and societies: Test Engineer on Indy Autonomous Racing Team, Phi Sigma Pi Alumni  
Completed Master of Science in Mechanical engineering with a focus on autonomous systems and GNSS technology. Research focused on GNSS data and RTK algorithms.

**Bachelor's of Mechanical Engineering**, Auburn University 2017 - 2021

**GPA:** 4.0.

## EXPERIENCE

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**Software Engineer** May 2024 - Present  
Trimble Inc. *Remote, United States*

- Embedded software engineer working on custom Linux based systems for next generation GNSS receivers.
- Developed custom software for GNSS receivers in C++ and Python using Yocto build system.
- Designed and maintained manufacturing API for programming boards and testing.

**Simulation Engineer** Sep 2022 - May 2024  
Trimble Autonomy *Auburn, Alabama*

- Simulation engineer working with multi robot coordination and ROS2.
- Developed and integrated new robotic platforms into the simulation including skid steer and articulated vehicles.
- Collaborated with cross-functional teams to enhance simulation accuracy.

**Simulation Engineer** Jan 2022 - Sep 2022  
Autonoma Inc. *Auburn, Alabama*

- Lead simulation engineer at Autonoma Inc. working on autonomous vehicle simulation.
- Developed a realistic vehicle simulation environment in Unity 3D for testing autonomous algorithms, integrating sensor models and environmental factors.

**Graduate Research Assistant** Aug 2021 - Sep 2022  
Auburn University *Auburn, Alabama*

- Full time research engineer at the Auburn University GPS and Vehicle Dynamics Laboratory.
- Fields of study include GPS measurement level data manipulation and algorithm development.
- Custom vehicle simulation development for autonomous vehicles with full sensor suite integration.

**Research And Development Specialist** Jan 2020 - May 2020  
Mercedes-Benz U.S. International, Inc. *Vance, Alabama*

- Designed and implemented a new assembly process for fender flare commodity.
- Managed prototyping trials on assembly line.
- Worked closely with suppliers to coordinate trials and ensure engineering changes were completed.

## Geometric Dimensioning and Tolerance Engineer

Mercedes-Benz U.S. International, Inc.

May 2019 - Jul 2019

Vance, Alabama

- Measured 20 vehicles per week for all gap and flush measurements.
- Ran time studies on liftgate and hood settling using photogrammetry techniques.
- Redesigned assembly jig fixtures in NX and Solidworks.

## SKILLS

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<b>Technical Skills</b>	C++, Python, Unity, Robot Operating System (ROS and ROS2), GNSS, Simulation, API Development, CI/CD, Yocto System Testing
<b>Software</b>	Visual Studio, Git, Docker, Linux, Unity, Unreal Engine, JetBrains Suite
<b>Other</b>	Algorithm Development, Data Manipulation, Multi-Robot Coordination, Multi-Robot Systems Sensor Fusion, Autonomous Systems, Application Development, Agile Development

## PROJECTS

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**Autonomous Vehicle Simulation.** Developed a realistic vehicle simulation environment in Unity 3D for testing autonomous algorithms, integrating sensor models and environmental factors.

**GNSS Data Processing.** Implemented algorithms for processing and filtering GNSS measurement data to improve positioning accuracy in challenging environments.

## LEADERSHIP

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- Actively participated in the Indy Autonomous Racing Team, contributing to the leadership, development and testing of autonomous racing algorithms.