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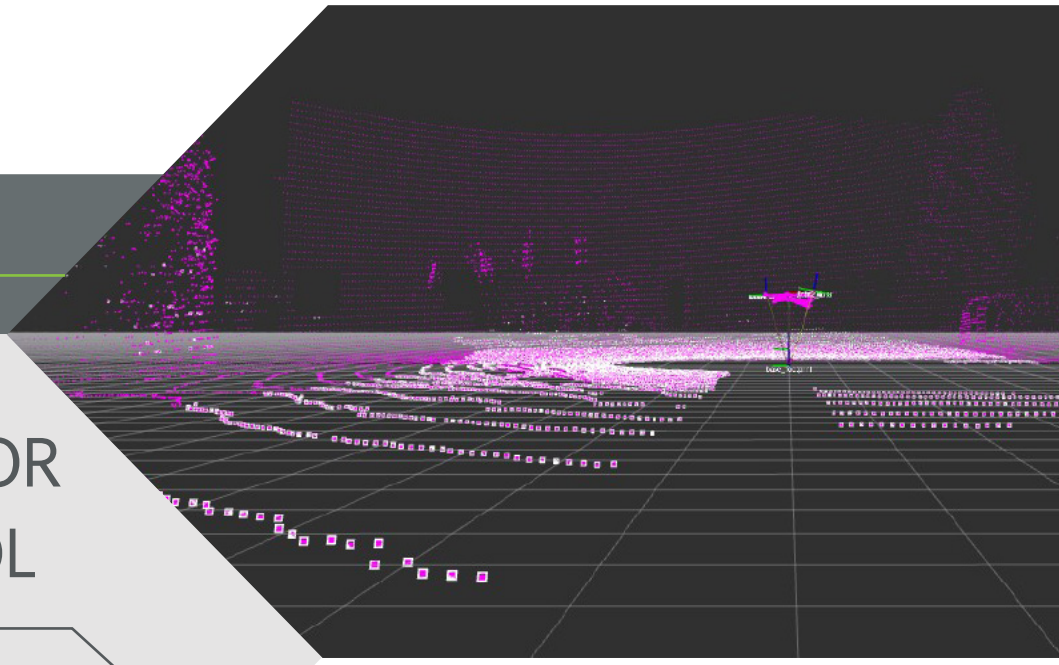

DATASPEED SENSOR CALIBRATION TOOL

FOR AUTONOMOUS VEHICLES

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SENSOR CALIBRATION

The integration of sensors has become the standard for most autonomous vehicles, but spending hours calibrating them consumes valuable testing and development time. The Dataspeed Sensor Calibration Tool is meant to aid users in setting up the extrinsics calibration of a suite of sensors on a vehicle. This convenient tool reduces the hassle of sensor setup and allows the user to spend more time on essential autonomous or data collection research.

Feature Summary

- Automatic ground plane detection and alignment for 3D lidar
- Automatic multi-lidar point cloud alignment
- Simple manual extrinsics adjustment tool to initialize automatic lidar calibration or to manually align other sensor data like cameras and RADAR
- Visualization of the extrinsic alignment of lidar data in a camera image to aid in manual calibration
- Export calibration output for incorporation into a user's runtime ROS configuration

Lidar Ground Plane Alignment

This calibration mode inputs the point cloud from a 3D lidar sensor, detects the ground plane in the cloud, and then adjusts the roll angle, pitch angle, and z offset of the transform from vehicle frame to lidar frame such that the ground plane is level and positioned at z = 0 in vehicle frame.

Multi-Lidar Alignment

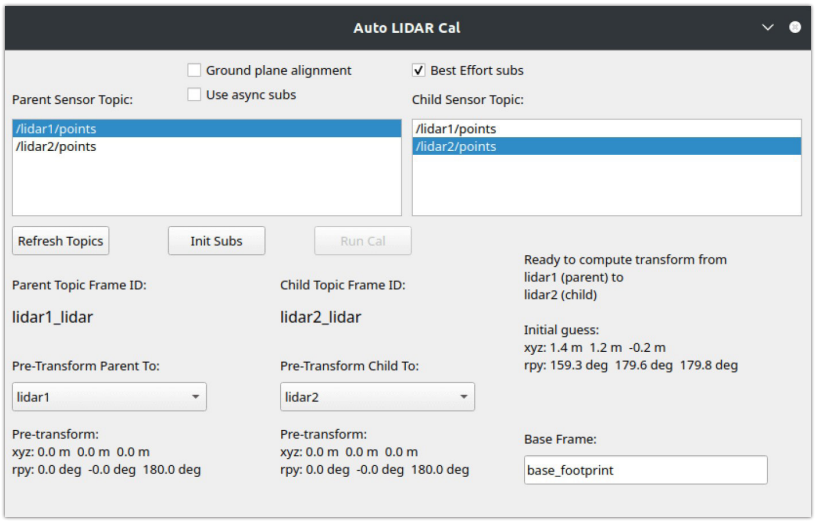
This calibration mode inputs point clouds from two 3D lidar sensors and computes the translation and orientation between the sensors' coordinate frames. It does this by comparing distinguishing features in the overlapping point clouds.

Lidar-Camera Overlay

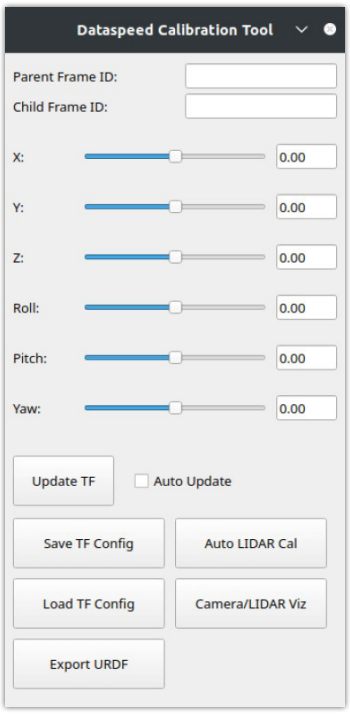
This tool overlays a lidar point cloud on a camera image in real time according to the current extrinsic transform between the two sensors. This can be used to adjust and verify the transform.

Camera-Camera Overlay

This tool constructs a composite image that visualizes the overlap between two camera images according to the current extrinsic transform between the cameras. This can be used to adjust and verify the transform.



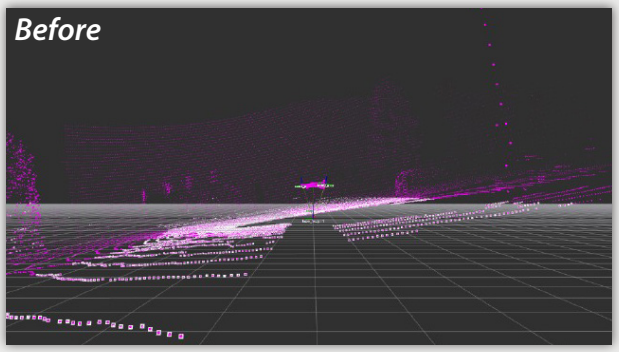
Lidar Auto-Calibration Window

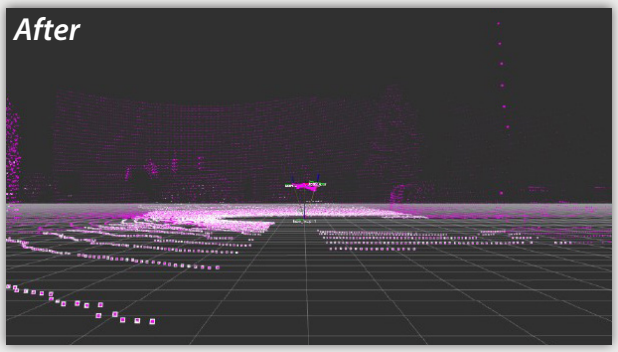


Main User Interface

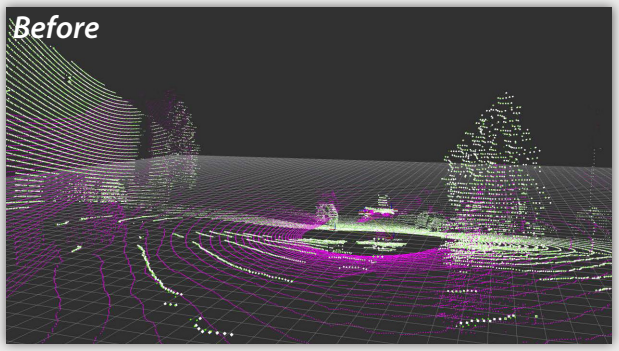
CALIBRATION EXAMPLES

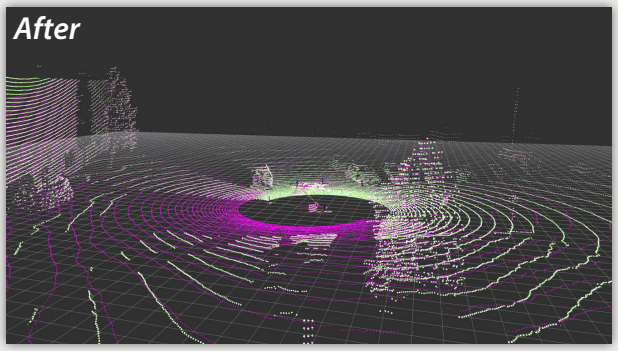
Lidar Ground Plane Alignment



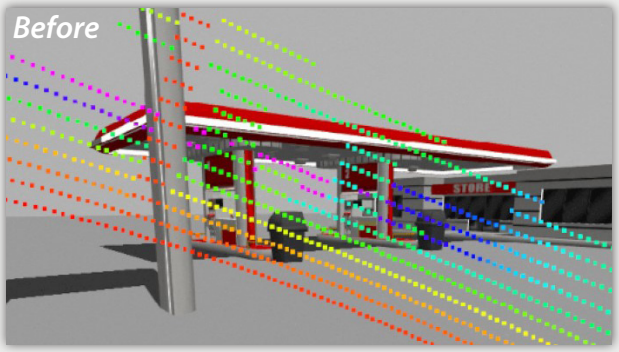


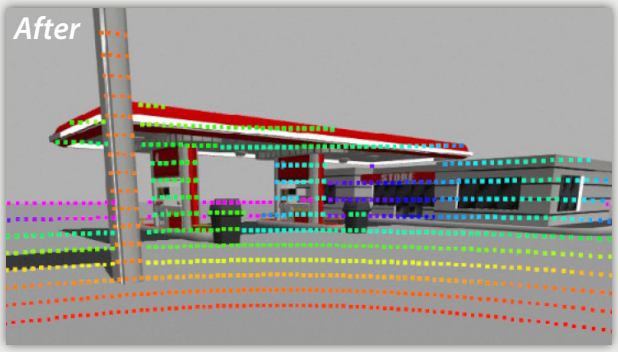
Multi-Lidar Alignment





Lidar-Camera Overlay





Camera-Camera Overlay

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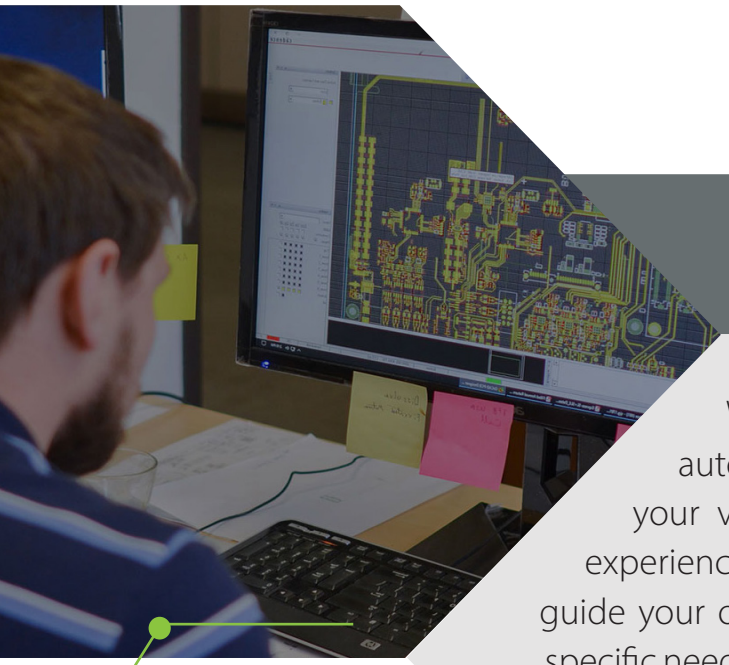

Partner with Dataspeed

Whether your company is just getting started in the autonomous vehicle (AV) industry or is looking to scale your vehicle fleet, Dataspeed has the solution for you. Our experienced team of engineers and business professionals can guide your organization in developing an action plan to meet your specific needs. We're skilled in full vehicle integration including by-wire implementation, sensor and computer installation, data acquisition, and vehicle communications. Our vehicle systems engineers have extensive experience creating custom hardware and software solutions. Contact us today to discuss how Dataspeed can accelerate your AV research and development.