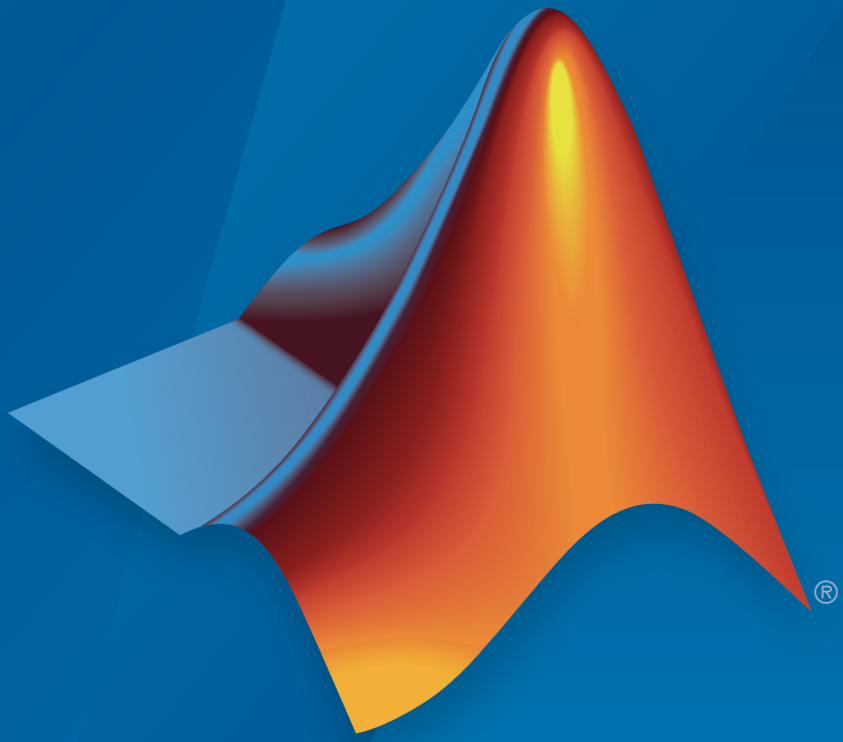
Robotics System Toolbox™ Release Notes



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R2015b

Version: 1.1

New Features

Vector Field Histogram Plus (VFH+) obstacle avoidance algorithm

The VFH+ obstacle avoidance algorithm is a reactive algorithm that calculates obstacle-free robot movements using range sensor information. You can use this algorithm to have your robot avoid unknown obstacles while driving through dynamic or partially known environments. See robotics.VectorFieldHistogram for more information.

Access to ROS parameters from Simulink

Simulink® workflows now support ROS parameters. You can get and set parameter values using the new `Get Parameter` and `Set Parameter` blocks.

Code generation for coordinate transforms and select robotics algorithms

For select Robotics System Toolbox™ algorithms, you can now generate C/C++ code using MATLAB® Coder™. You can create MEX-files and shared libraries from your MATLAB application. These code generation workflows are supported for the coordinate transformation functions (“Coordinate System Transformations”), the VFH+ obstacle avoidance algorithm, and the Pure Pursuit controller algorithm (robotics.PurePursuit). See “Code Generation” for more information.

R2015a

Version: 1.0

New Features

Path planning, path following, and map representation algorithms

The Robotics System Toolbox provides algorithms for path planning, path following, and map representations. The support in this release includes classes for Binary Occupancy Grids, Probabilistic Roadmaps (PRM), and a Pure Pursuit controller.

Functions for converting between different rotation and translation representations

Coordinate system transformations are provided as functions for converting between many different representations including quaternions, rotation matrices, homogeneous transformation matrices, and Euler angles. Other functions are available for converting between radians and degrees and for angle calculations. For more information, see Coordinate System Transformations.

Bidirectional communication with live ROS-enabled robots

Communication with ROS using publishers and subscribers is available in MATLAB and Simulink. Many message types are readily supported. Robotics System Toolbox can also access ROS services, the parameter server, and the tf transformation tree in MATLAB.

Interface to Gazebo and other ROS-enabled simulators

ROS-enabled simulators allow prototyping of algorithms and testing systems developed in MATLAB. Connection to a Gazebo simulator is supported with an example interacting with the simulator shown here: Reading Model and Simulation Properties from Gazebo.

Data import from rosbag log files

This release of the Robotics System Toolbox includes the ability to access rosbags, which are logfiles from ROS. You can access whole log files or portions and manipulate the data as desired (see Working with rosbag Logfiles).

ROS node generation from Simulink models (with Embedded Coder)

This release includes ROS node generation using Simulink. You can use Simulink to create models that exchange messages with a ROS network. Using Embedded Coder®, you can generate C++ code for standalone ROS nodes from these models.