Title

Using ROS and ROS 2 with MATLAB and Simulink

Presenter

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Abstract

ROS is a commonly used framework for designing complex robotic systems. It is popular for building distributed robot software systems, as well as for its integration with packages for simulation, visualization, robotics algorithms, and more. ROS has become increasingly popular in industry, especially in the development of autonomous vehicles.

The ROS interface provided by MathWorks ROS Toolbox lets you: 1) connect to a ROS network from any operating system supported by MATLAB[®] and Simulink[®], 2) leverage built-in functionality in MathWorks toolboxes – for example, control systems, computer vision, machine learning, signal processing, and state machine design; and 3) automatically generate stand-alone C++ ROS nodes from algorithms designed in MATLAB and Simulink. MATLAB and Simulink can coexist with your ROS based workflow via desktop prototyping, deployment of standalone ROS nodes, or both. This tutorial will introduce how to design the ROS-based applications in MATLAB and Simulink.

Through several examples, we will cover:

- Data analysis for ROS in MATLAB and Simulink
- Algorithm prototyping and development using ROS and ROS 2 network connection to external simulator and hardware
- ROS node generation and deployment.

Bio

YJ Lim is a Senior Technical Product Manager of robotics and autonomous systems at the MathWorks. He has over 20 years of experience in robotics and autonomous systems area. Lim's responsibility in MathWorks includes long-term strategy development and product management of robotics and autonomous systems. Before joining MathWorks, Lim worked at Vecna Robotics based in Waltham, MA as a Sr. Project Manager focused on Vecna's advanced robotics system development. Prior to Vecna, he served as the Chief Innovation Officer at Hstar Technologies, a startup focused on agile mobile robotic platform and healthcare service robotics system. He worked with government agencies and served on governmental working groups on matters of advanced robotics system research. Lim also led development teams at Energid Technologies, a firm that provides engineering services and products for advanced robotic, machine-vision, and simulation applications, for robotic software development. Lim received his Ph.D. in mechanical engineering from Rensselaer Polytechnic Institute (RPI) and his Master from KAIST in S. Korea.