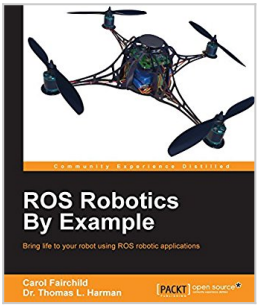

ROS Robotics By Example

By Carol Fairchild, Dr. Thomas L. Harman

ROS Robotics By Example By Carol Fairchild, Dr. Thomas L. Harman

Key Features

- This book will help you boost your knowledge of ROS and give you advanced practical experience you can apply to your ROS robot platforms
- This is the only book that offers you step-by-step instructions to solidify your ROS understanding and gain experience using ROS tools
- From eminent authors, this book offers you a plethora of fun-filled examples to make your own quadcopter, turtlebot, and two-armed robots

Book Description

The visionaries who created ROS developed a framework for robotics centered on the commonality of robotic systems and exploited this commonality in ROS to expedite the development of future robotic systems.

From the fundamental concepts to advanced practical experience, this book will provide you with an incremental knowledge of the ROS framework, the backbone of the robotics evolution. ROS standardizes many layers of robotics functionality from low-level device drivers to process control to message passing to software package management. This book provides step-by-step examples of mobile, armed, and flying robots, describing the ROS implementation as the basic model for other robots of these types. By controlling these robots, whether in simulation or in reality, you will use ROS to drive, move, and fly robots using ROS control.

What you will learn

- Get to know the fundamentals of ROS and apply its concepts to real robot examples
- Control a mobile robot to navigate autonomously in an environment
- Model your robot designs using URDF and Xacro, and operate them in a ROS Gazebo simulation
- Control a 7 degree-of-freedom robot arm for visual servoing
- Fly a quadcopter to autonomous waypoints
- Gain working knowledge of ROS tools such as Gazebo, rviz, rqt, and Move-It
- Control robots with mobile devices and controller boards

About the Author

Carol Fairchild is the owner and principal engineer of Fairchild Robotics, a robotics development and integration company. She is a researcher at Baxter's Lab at the University of Houston–Clear Lake (UHCL) and a member of the adjunct faculty. Her research involves the use of Baxter for expanded applications. Ms. Fairchild has been involved in many aspects of robotics from her earliest days of building her first robot, a Heathkit Hero. She has an MS in computer engineering from UHCL and a BS in engineering technology from Texas A&M. Ms. Fairchild has taught middle-school robotics, coached FLL, and volunteered for FIRST Robotics in Houston.

Dr. Thomas L. Harman is the chair of the engineering division at UHCL. His research interests are control systems and applications of robotics and microprocessors. Several of his research papers with colleagues involve robotic and laser applications in medicine. In 2005, he was selected as the UHCL Distinguished Professor. He has been a judge and safety advisor for the FIRST robotic contests in Houston. Dr. Harman has authored or coauthored 18 books on subjects including microprocessors, MATLAB and Simulink applications, and the National Electrical Code. His laboratory at UHCL has a Baxter two-armed robot and several TurtleBots as well as other robots.

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Editorial Review

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