

Navigation Toolbox™

Getting Started Guide



MATLAB® & SIMULINK®

R2023a



How to Contact MathWorks



Latest news: www.mathworks.com
Sales and services: www.mathworks.com/sales_and_services
User community: www.mathworks.com/matlabcentral
Technical support: www.mathworks.com/support/contact_us



Phone: 508-647-7000



The MathWorks, Inc.
1 Apple Hill Drive
Natick, MA 01760-2098

Navigation Toolbox™ Getting Started Guide

© COPYRIGHT 2019–2023 by The MathWorks, Inc.

The software described in this document is furnished under a license agreement. The software may be used or copied only under the terms of the license agreement. No part of this manual may be photocopied or reproduced in any form without prior written consent from The MathWorks, Inc.

FEDERAL ACQUISITION: This provision applies to all acquisitions of the Program and Documentation by, for, or through the federal government of the United States. By accepting delivery of the Program or Documentation, the government hereby agrees that this software or documentation qualifies as commercial computer software or commercial computer software documentation as such terms are used or defined in FAR 12.212, DFARS Part 227.72, and DFARS 252.227-7014. Accordingly, the terms and conditions of this Agreement and only those rights specified in this Agreement, shall pertain to and govern the use, modification, reproduction, release, performance, display, and disclosure of the Program and Documentation by the federal government (or other entity acquiring for or through the federal government) and shall supersede any conflicting contractual terms or conditions. If this License fails to meet the government's needs or is inconsistent in any respect with federal procurement law, the government agrees to return the Program and Documentation, unused, to The MathWorks, Inc.

Trademarks

MATLAB and Simulink are registered trademarks of The MathWorks, Inc. See www.mathworks.com/trademarks for a list of additional trademarks. Other product or brand names may be trademarks or registered trademarks of their respective holders.

Patents

MathWorks products are protected by one or more U.S. patents. Please see www.mathworks.com/patents for more information.

Revision History

September 2019	Online only	New for Version 1.0 (R2019b)
March 2020	Online only	Rereleased for Version 1.1 (R2020a)
September 2020	Online only	Revised for Version 1.2 (R2020b)
March 2021	Online only	Revised for Version 2.0 (R2021a)
September 2021	Online only	Revised for Version 2.1 (R2021b)
March 2022	Online only	Revised for Version 2.2 (R2022a)
September 2022	Online only	Revised for Version 2.3 (R2022b)
March 2023	Online only	Revised for Version 2.4 (R2023a)

1	Product Overview	
	1-1
	Navigation Toolbox Product Description	1-1

Product Overview

Navigation Toolbox Product Description

Design, simulate, and deploy algorithms for autonomous navigation

Navigation Toolbox™ provides algorithms and analysis tools for motion planning, simultaneous localization and mapping (SLAM), and inertial navigation. The toolbox includes customizable search and sampling-based path-planners, as well as metrics for validating and comparing paths. You can create 2D and 3D map representations, generate maps using SLAM algorithms, and interactively visualize and debug map generation with the SLAM map builder app. The toolbox provides sensor models and algorithms for localization. You can simulate and visualize IMU, GPS, and wheel encoder sensor data, and tune fusion filters for multi-sensor pose estimation.

Reference examples are provided for automated driving, robotics, and consumer electronics applications. You can test your navigation algorithms by deploying them directly to hardware (with MATLAB® Coder™ or Simulink® Coder).

