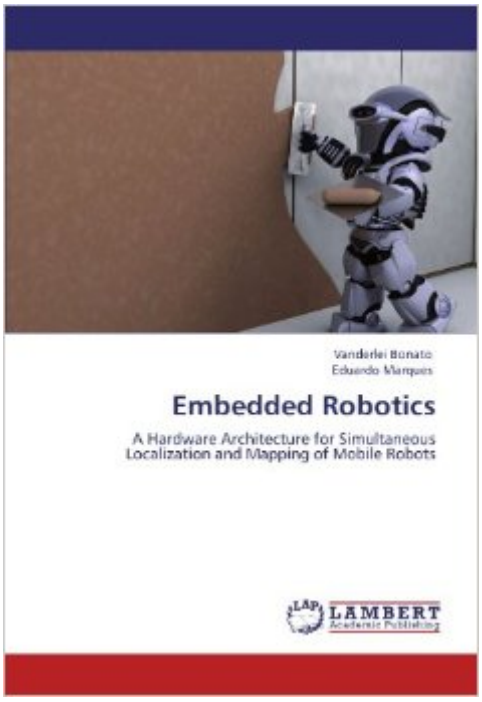
Embedded Robotics: A Hardware Architecture For Simultaneous Localization And Mapping Of Mobile Robots



Synopsis

This book presents a hardware architecture for the Simultaneous Localization And Mapping (SLAM) problem applied to embedded robots. The architecture is composed by highly specialized modules for robot localization and feature-based map building from images obtained directly from CMOS cameras in real time. The system is completely embedded on a Field-Programmable Gate Array (FPGA) device, where several hardware-orientated optimizations are exploited. The main modules of the architecture are the Extended Kalman Filter (EKF) and the feature detection system based on the SIFT (Scale Invariant Feature Transform) algorithm. Additionally, this book also presents basic concepts about mapping and state-of-the-art algorithms for SLAM with monocular and stereo vision.

Book Information

Paperback: 140 pages
Publisher: LAP LAMBERT Academic Publishing (September 28, 2011)
Language: English
ISBN-10: 3846508160
ISBN-13: 978-3846508169
Product Dimensions: 5.9 x 0.3 x 8.7 inches
Shipping Weight: 9 ounces (View shipping rates and policies)
Average Customer Review: Be the first to review this item
Best Sellers Rank: #9,709,022 in Books (See Top 100 in Books) #71 inÂ Books > Computers & Technology > Programming > Software Design, Testing & Engineering > Localization #19847 inÂ Books > Computers & Technology > Hardware & DIY

payments, and automated voice call systems with XHTML MP, WCSS, and mobile AJAX SLAM Using Monocular Vision and Inertial Measurements: A New Low-cost Approach for Portable Simultaneous Localization and Mapping Simultaneous Localization And Mapping: Exactly Sparse Information Filters (Volume 3) Localization in Wireless Sensor Network: An enhanced composite approach with mobile beacon shortest path to solve localization problem in wireless sensor network Go Mobile: Location-Based Marketing, Apps, Mobile Optimized Ad Campaigns, 2D Codes and Other Mobile Strategies to Grow Your Business Embedded FreeBSD Cookbook (Embedded Technology) Robotics, Vision and Control: Fundamental Algorithms in MATLAB (Springer Tracts in Advanced Robotics) Spatial Representation and Reasoning for Robot Mapping: A Shape-Based Approach (Springer Tracts in Advanced Robotics) National Geographic Kids Everything Robotics: All the Photos, Facts, and Fun to Make You Race for Robots Biomimetic Neural Learning for Intelligent Robots: Intelligent Systems, Cognitive Robotics, and Neuroscience (Lecture Notes in Computer Science) 3D-Position Tracking and Control for All-Terrain Robots (Springer Tracts in Advanced Robotics) Making Simple Robots: Exploring Cutting-Edge Robotics with Everyday Stuff Mapping Australia (Mapping the World (Gareth Stevens))