Embedded Systems and Robotics with Open Source Tools

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Embedded Systems and Robotics with Open Source Tools Nilanjan Dey,Amartya Mukherjee,2018-09-03 Embedded Systems and Robotics with Open Source Tools provides easy to understand and easy to implement guidance for rapid prototype development Designed for readers unfamiliar with advanced computing technologies this highly accessible book Describes several cutting edge open source software and hardware technologies Examines a number of embedded computer systems and their practical applications Includes detailed projects for applying rapid prototype development skills in real time Embedded Systems and Robotics with Open Source Tools effectively demonstrates that with the help of high performance microprocessors microcontrollers and highly optimized algorithms one can develop smarter embedded devices **Embedded Systems and Robotics with Open Source Tools** Nilanjan Dey,Amartya Mukherjee,2016-07-12 Embedded Systems and Robotics with Open Source Tools provides easy to understand and easy to implement guidance for rapid prototype development Designed for readers unfamiliar with advanced computing technologies this highly accessible book Describes several cutting edge open source software and hardware technologies Examines a number of embedded computer systems and their practical applications Includes detailed projects for applying rapid prototype development skills in real time Embedded Systems and Robotics with Open Source Tools effectively demonstrates that with the help of high performance microprocessors microcontrollers and highly optimized algorithms one can develop smarter embedded devices **Embedded Systems and Robotics with Open Source Tools** Nilanjan Dey,2017-07-20 Embedded Systems and Robotics with Open Source Tools By Nilanjan Dey *Sustainable Intelligent Systems* Amit Joshi,Atulya K. Nagar,Gabriela Marín-Raventós,2021-03-06 This book discusses issues related to ICT intelligent systems data science AI machine learning sustainable development and overall their impacts on sustainability It provides an overview of the technologies of future The book also discusses novel intelligent algorithms and their applications to move from a data centric world to sustainable world It includes research paradigms on sustainable development goals and societal impacts The book provides an overview of cutting edge techniques toward sustainability and ideas to help researchers who want to understand the challenges and opportunities of using smart management perspective for sustainable society It serves as a reference to wide ranges of readers from computer science data analysts AI technocrats and management researchers Open-Source Robotics and Process Control Cookbook Lewin Edwards,2011-08-30 In this practical reference popular author Lewin Edwards shows how to develop robust dependable real time systems for robotics and other control applications using open source tools It demonstrates efficient and low cost embedded hardware and software design techniques based on Linux as the development platform and operating system and the Atmel AVR as the primary microcontroller The book provides comprehensive examples of sensor actuator and control applications and circuits along with source code for a number of projects It walks the reader through the process of setting up the Linux based controller from creating a custom kernel to customizing the

BIOS to implementing graphical control interfaces Including detailed design information on ESBUS PC host interface Host module communications protocol A speed controlled DC motor with tach feedback and thermal cut off A stepper motor controller A two axis attitude sensor using a MEMS accelerometer Infrared remote control in Linux using LIRC Machine vision using Video4Linux The first ever book on using open source technology for robotics design Covers hot topics such as GPS navigation 3 D sensing and machine vision all using a Linux platform   **Corporate Open Source** Zuri Deepwater,AI,2025-02-18 Corporate Open Source examines the growing trend of major software companies contributing to open source projects and its impact on innovation developer ecosystems and the broader technology landscape The book highlights how strategic corporate involvement can foster innovation and enhance brand reputation Interestingly open source development has shifted from being primarily driven by individual enthusiasts to a mainstream practice where corporations play a dominant role The book explores the motivations behind corporate open source initiatives the organizational structures that enable successful contributions and the resulting impact on developer ecosystems It emphasizes the importance of balancing business interests with genuine community engagement Through case studies and research the book demonstrates that a purely self serving approach can backfire alienating developers and undermining the potential benefits The book begins by introducing core open source concepts and then explores corporate motivations models and ethical considerations This approach provides a comprehensive analysis of the interplay between corporate strategy and community values making it valuable for software developers technology managers and business executives seeking to understand the evolving dynamics of technology management and business management in the open source world

Simulation, Modeling, and Programming for Autonomous Robots Noriako Ando,Stephen Balakirsky,Thomas Hemker,Monica Reggiani,Oskar von Stryk,2010-11-05 Why are the many highly capable autonomous robots that have been promised for novel applications driven by society industry and research not available day despite the tremendous progress in robotics science and systems achieved during the last decades Unfortunately steady improvements in speci c robot abilities and robot hardware have not been matched by corresponding robot performance in real world environments This is mainly due to the lack of vancements in robot software that master the development of robotic systems of ever increasing complexity In addition fundamental open problems are still awaiting sound answers while the development of new robotics applications s fersfromthelackofwidelyusedtools libraries andalgorithmsthataredesigned in a modular and performant manner with standardized interfaces Simulation environments are playing a major role not only in reducing development time and cost e g by systematic software or hardware in the loop testing of robot performance but also in exploring new types of robots and applications H ever their use may still be regardedwith skepticism Seamless migrationof code using robot simulators to real world systems is still a rare circumstance due to the complexity of robot world sensor and actuator modeling These challenges drive the quest for the next generation of methodologies and tools for robot development The objective of the

International Conference on Simulation Modeling and ProgrammingforAutonomous Robots SIMPAR is to o er a unique forum for these topics and to bring together researchersfrom academia and industry to identify and solve the key issues necessary to ease the development of increasingly complex robot software   Robot Operating System (ROS) Anis Koubaa,2020-08-21 This book is the fifth volume in the successful book series Robot Operating System The Complete Reference The objective of the book is to provide the reader with comprehensive coverage on the Robot Operating System ROS which is currently considered to be the primary development framework for robotics applications and the latest trends and contributing systems The content is divided into six parts Pat I presents for the first time the emerging ROS 2 0 framework while Part II focuses on multi robot systems namely on SLAM and Swarm coordination Part III provides two chapters on autonomous systems namely self driving cars and unmanned aerial systems In turn Part IV addresses the contributions of simulation frameworks for ROS In Part V two chapters explore robotic manipulators and legged robots Finally Part VI presents emerging topics in monocular SLAM and a chapter on fault tolerance systems for ROS Given its scope the book will offer a valuable companion for ROS users and developers helping them deepen their knowledge of ROS capabilities and features
    Proceedings of Fourth International Conference on Computing, Communications, and Cyber-Security Sudeep Tanwar,Slawomir T. Wierzchon,Pradeep Kumar Singh,Maria Ganzha,Gregory Epiphaniou,2023-07-01 This book features selected research papers presented at the Fourth International Conference on Computing Communications and Cyber Security IC4S 2022 organized in Ghaziabad India during October 21 22 2022 The conference was hosted at KEC Ghaziabad in collaboration with WSG Poland SFU Russia CSRL India It includes innovative work from researchers leading innovators and professionals in the area of communication and network technologies advanced computing technologies data analytics and intelligent learning the latest electrical and electronics trends and security and privacy issues   *Software Architectures for Humanoid Robotics* Lorenzo Natale,Tamim Asfour,Fumio Kanehiro,Nikolaus Vahrenkamp,2018-10-11   **Embedded Systems Programming** ,1995   **Dr. Dobb's Journal** ,2001   **Nuts & Volts** ,2005   *C/C++ Users Journal* ,2001
    EDN ,2006   *Embedded Systems Design* ,2006   *Proceedings, Sixth IEEE International Symposium on Object-Oriented Real-Time Distributed Computing* Peter Puschner,Tatsuo Nakajima,Arif Ghafoor,2003 ISORC 2003 strives to present state of the art research in ORC reflecting various perspectives of ORC from programming and system engineering topics such as ORC paradigms and object models to Web based applications and system evaluation techniques The diversity of the topics highlights the importance of ORC in today s high tech world   **JAVA Developer's Journal** ,1996   **Dr. Dobb's Journal of Software Tools for the Professional Programmer** ,2002   Programming Robots with ROS Morgan Quigley,Brian Gerkey,William D. Smart,2015-11-16 Want to develop novel robot applications but don t know how to write a mapping or object recognition system You re not alone but you re certainly not without help By combining real world examples with valuable knowledge from the Robot Operating System ROS community this practical book provides a set of

motivating recipes for solving specific robotics use cases Ideal for enthusiasts from students in robotics clubs to professional robotics scientists and engineers each recipe describes a complete solution using ROS open source libraries and tools You ll learn how to complete tasks described in the recipes as well as how to configure and recombine components for other tasks If you re familiar with Python you re ready to go Learn fundamentals including key ROS concepts tools and patterns Program robots that perform an increasingly complex set of behaviors using the powerful packages in ROS See how to easily add perception and navigation abilities to your robots Integrate your own sensors actuators software libraries and even a whole robot into the ROS ecosystem Learn tips and tricks for using ROS tools and community resources debugging robot behavior and using C in ROS

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