Line Follower

Emilie Sanchez

Line Following with Obstacle Avoidance using BOE-BOT Bandar Hezam,2023-12-05 Seminar paper from the year 2019 in the subject Engineering - Robotics, grade: A, The University of Malaya (Asia Pacific University), course: Mechatronics, language: English, abstract: In this assignment, programming the BOE-BOTS for maze solving was required. The BOE-BOTS were tasked to follow a specific line from the start to the end. In addition to that, there would be obstacles that the BOE-BOTS need to face. The BOE-BOTS will have to avoid those obstacles and reach the end. This report was written for the purpose of discussing the process of developing the program used in this assignment for the maze solving. Firstly, it will provide the reader with a technical background so they can understand the process of development of the program made for this assignment. Secondly, the used codes would be keenly analyzed and explained. Third and lastly, the challenges that were encountered in the process of developing and the process of developing itself will be talked about in detail followed by a conclusion of the whole report.

Control Engineering Theory and Applications Jahangir Alam,Guoqing Hu,Hafiz Md. Hasan Babu,Huazhong Xu,2022-11-17 The book provides general knowledge of automatic control engineering and its applications. Providing an overview of control theory and systems, the chapters introduce transfer functions, modeling of control systems, automatic control systems, block diagrams, and signal flow graphs. While control system analysis and design are accompanied by root-locus methods and frequency response analyses, distributed control systems, nonlinarity in control systems including Z-transformation are also presented. With straightforward demonstrations, examples, and multiple-choice questions, this book can be used as a reference textbook for electrical and electronics engineering, computer control engineering, automation engineering, mechatronics engineering, mechanics, robotics, AI control systems, hydraulics, process engineering, safety control engineering, aeronautical and aerospace engineering, auto-pilot system, decision-making system, and stock exchange, and will be suitable for majors, non-majors, and experts in the field of science and technology.

Smart Grids for Smart Cities, Volume 2 O. V. Gnana Swathika,K. Karthikeyan,Sanjeevikumar Padmanaban,2023-07-12 SMART GRIDS for SMART CITIES Written and edited by a team of experts in the field, this second volume in a two-volume set focuses on an interdisciplinary perspective on the financial, environmental, and other benefits of smart grid technologies and solutions for smart cities. This second volume in this groundbreaking two-volume set continues the authors' and editors' mission to present the concepts and best practices of smart grids and how they can be utilized within the framework of a technological tapestry to create smart cities. Continuing to go through the challenges and their practical solutions, this second volume includes chapters on waste management, e-waste, automotive and transportation engineering, and how internet-of-things can be utilized within these "smart" technologies, and many others. Like its predecessor, this exciting new volume covers all of these technologies, including the basic concepts and the problems and solutions involved with practical applications in the real world. Whether for the veteran engineer or scientist, the student, or a manager or other technician working in the field, this volume is a must-have for any library.

Official Gazette of the United States Patent Office United States. Patent Office,1896

Advances in Manufacturing Adam Hamrol,Olaf Ciszak,Stanisław Legutko,Mieczysław Jurczyk,2017-10-18 This book covers a variety of topics in material, mechanical, and management engineering, especially in the area of machine design, product assembly, measurement systems, process planning and quality control. It describes cutting-edge methods and applications, together with exemplary case studies. The content is based on papers presented at the 5th International Scientific-Technical Conference (MANUFACTURING 2017) held in Poznan, Poland on 24-26 October 2017. The book brings together engineering and economic topics, is intended as an extensive, timely and practice-oriented reference guide for researchers and practitioners, and is expected to foster better communication and closer cooperation between universities and their business and industry partners.

Programming Lego Mindstorms NXT Owen Bishop,2008-06-16 Teach your robot new tricks! With this projects-based approach you can program your Mindstorms NXT robot to solve a maze, build a house, run an obstacle course, and many other activities. Along the way you will learn the basics of programming structures and techniques using NXT-G and Microsoft VPL. For hobbyists, and students working on robot projects, Bishop provides the background and tools to program your robot for tasks that go beyond the simple routines provided with the robot kit. The programs range in complexity from simple contact avoidance and path following, to programs generating some degree of artificial intelligence * a how-to guide for programming your robot, using NXT-G and Microsoft VPL * ten robot-specific projects show how to extend your robot's capabilities beyond the manufacturer's provided software. Examples of projects include: Maze solver, Robot House Builder, Search (obstacle avoidance), Song and Dance Act * flowcharts and data flow diagrams are used to illustrate how to develop programs * introduces basic programming structures

Official Gazette of the United States Patent Office USA Patent Office,1895

Intelligent Technologies: Design and Applications for Society Vladimir Robles-Bykbaev,Josefa Mula,Gilberto Reynoso-Meza,2023-01-31 This book is oriented towards applications and perspectives on future developments connected to intelligent technologies. Specifying topics connected to industry, mobility, telecommunications, biomechanics, among others. The innovative character of the text allows relating technical experiences and advances that seek to improve the implication of new technologies at local, national and regional levels, demonstrating the advances towards the different fields of knowledge in the area of engineering. The potential readers of this work would be master and doctorate students, professors–researchers in the field of new technologies and companies connected to the development of engineering. The texts serve to illustrate new procedures, new cases and new techniques for the optimization of systems that optimize social progress.

Intelligent and Fuzzy Techniques in Big Data Analytics and Decision Making Cengiz Kahraman,Selcuk Cebi,Sezi Cevik Onar,Basar Oztaysi,A. Cagri Tolga,Irem Ucal Sari,2019-07-05 This book includes the proceedings of the Intelligent and Fuzzy Techniques INFUS 2019 Conference, held in Istanbul, Turkey, on July 23–25, 2019. Big data analytics refers to the strategy of analyzing large volumes of data, or big data, gathered from a wide variety of sources, including social networks, videos, digital images, sensors, and sales transaction records. Big data analytics allows data scientists and various other users to evaluate large volumes of transaction data and other data sources that traditional business systems would be unable to tackle. Data-driven and knowledge-driven approaches and techniques have been widely used in intelligent decision-making, and they are increasingly attracting attention due to their importance and effectiveness in addressing uncertainty and incompleteness. INFUS 2019 focused on intelligent and fuzzy systems with applications in big data analytics and decision-making, providing an international forum that brought together those actively involved in areas of interest to data science and knowledge engineering. These proceeding feature about 150 peer-reviewed papers from countries such as China, Iran, Turkey, Malaysia, India, USA, Spain, France, Poland, Mexico, Bulgaria, Algeria, Pakistan, Australia, Lebanon, and Czech Republic.

Proceedings of SAI Intelligent Systems Conference (IntelliSys) 2016 Yaxin Bi,Supriya Kapoor,Rahul Bhatia,2017-08-22 These proceedings of the SAI Intelligent Systems Conference 2016 (IntelliSys 2016) offer a remarkable collection of papers on a wide range of topics in intelligent systems, and their applications to the real world. Authors hailing from 56 countries on 5 continents submitted 404 papers to the conference, attesting to the global importance of the conference's themes. After being reviewed, 222 papers were accepted for presentation, and 168 were ultimately selected for these proceedings. Each has been reviewed on the basis of its originality, novelty and rigorousness. The papers not only present state-of-the-art methods and valuable experience from researchers in the related research areas; they also outline the field's future development.

Unofficial LEGO MINDSTORMS NXT 2.0 Inventor's Guide David J. Perdue,2011 Helps readers harness the capabilities of the LEGO MINDSTORMS NXT set and effectively plan, build and program NXT 2.0 robots, offering an overview of the pieces in the NXT set, practical building techniques, instruction on the official NXT-G programming language and step-by-step instructions for building, programming and testing a variety of sample robots. Original.

Proceedings of Mechanical Engineering Research Day 2017 Mohd Fadzli Bin Abdollah,Tee Boon Tuan,Mohd Azli Salim,Mohd Zaid Akop,Rainah Ismail,Haslinda Musa,2017-05-29 This e-book is a compilation of papers presented at the Mechanical Engineering Research Day 2017 (MERD'17) - Melaka, Malaysia on 30 March 2017.

Designing, Constructing, and Programming Robots for Learning Eteokleous, Nikleia,Nisiforou, Efi,2021-11-19 The field of robotics in a classroom context has seen an increase in global momentum recently because of its positive contributions in the teaching of science, technology, engineering, mathematics (STEM) and beyond. It is argued that when robotics and programming are integrated in developmentally appropriate ways, cognitive skill development beyond STEM can be achieved. The development of educational robotics has presented a plethora of ways in which students can be assisted in the classroom. Designing, Constructing, and Programming Robots for Learning highlights the importance of integrating robotics in educational practice and presents various ways for how it can be achieved. It further explains how 21st century skills and life skills can be developed through the hands-on experience of educational robotics. Covering topics such as computational thinking, social skill enhancement, and teacher training, this text is an essential resource for engineers, educational software developers, teachers, professors, instructors, researchers, faculty, leaders in educational fields, students, and academicians.

Aneka Proyek Mikrokontroler PIC16F84/A ,

Design and Fabrication of a Line Follower Robot Mohammad Eskatul Islam,2011-07 Line Follower Robot is the integrated design from the knowledge of Mechanical, Electrical and Computer engineering. This Project enables a C coded computer program to guide vehicle movement of two rear wheels of a robot car through electrical circuits with signal generation system transformed by a parallel port. This signal is interpreted in the DC motor. Hexadecimal data based command transformed to Binary data based signal that executes the electrical relay operations to drive the robot in line!

English Patents of Inventions, Specifications ,1871

Smart Learning Objects for Smart Education in Computer Science Vytautas Štuikys,2015-05-31 This monograph presents the challenges, vision and context to design smart learning objects (SLOs) through Computer Science (CS) education modelling and feature model transformations. It presents the latest research on the meta-programming-based generative learning objects (the latter with advanced features are treated as SLOs) and the use of educational robots in teaching CS topics. The introduced methodology includes the overall processes to develop SLO and smart educational environment (SEE) and integrates both into the real education setting to provide teaching in CS using constructivist and project-based approaches along with evaluation of pedagogic outcomes. Smart Learning Objects for Smart Education in Computer Science will appeal to researchers in CS education particularly those interested in using robots in teaching, course designers and educational software and tools developers. With research and exercise questions at the end of each chapter students studying CS related courses will find this work informative and valuable too.

Innovator's Era Shashank Shekhar Mishra,2021-02-25 All through our academics, we are supposed to perform some research-based projects. Most of us carry our projects in higher education and/or become a research scholar. But, in general, our innovations do not receive vital visibility. So, we came up with the idea of creating a platform that helps researchers in attaining visibility on their innovative ideas. The sole aim of the Innovators Era is to encourage young minds by rewarding them for their brainstorming ideas. We want our readers to acknowledge the obscured innovations taking place around us.

ESP8266 Robotics Projects Pradeeka Seneviratne,2017-11-30 Build simple yet amazing robotics projects using ESP8266 About This Book Get familiar with ESP8266 and its features. Build Wi-FI controlled robots using ESP8266 A project based book that will use the ESP8266 board and some of its popular variations to build robots. Who This Book Is For This book is targeted at enthusiasts who are interested in developing low-cost robotics projects using ESP8266. A basic knowledge of programming will be useful but everything you need to know is are covered in the book. What You Will Learn Build a basic robot with the original ESP8266, Arduino UNO, and a motor driver board. Make a Mini Round Robot with ESP8266 HUZZAH Modify your Mini Round Robot by integrating encoders with motors Use the Zumo chassis kit to build a line-following robot by connecting line sensors Control your Romi Robot with Wiimote Build a Mini Robot Rover chassis with a gripper and control it through Wi-Fi Make a robot that can take pictures In Detail The ESP8266 Wi-Fi module is a self-contained SOC with an integrated TCP/IP protocol stack and can give any microcontroller access to your Wi-Fi network. It has a powerful processing and storage capability and also supports application hosting and Wi-Fi networking. This book is all about robotics projects based on the original ESP8266 microcontroller board and some variants of ESP8266 boards. It starts by showing all the necessary things that you need to build your development environment with basic hardware and software components. The book uses the original ESP8266 board and some variants such as the Adafruit HUZZAH ESP8266 and the Adafruit Feather HUZZAH ESP8266 . You will learn how to use different type of chassis kits, motors, motor drivers, power supplies, distribution boards, sensors, and actuators to build robotics projects that can be controlled via Wi-Fi. In addition, you will learn how to use line sensors, the ArduiCam, Wii Remote, wheel encoders, and the Gripper kit to build more specialized robots. By the end of this book, you will have built a Wi-Fi control robot using ESP8266. Style and approach A project-based guide that will help you build exciting robotics using ESP8266.

Intel Edison Projects Avirup Basu,2017-05-30 Build powerful Robots and IoT solutions using Intel Edison About This Book Learn to build advanced level robots with Intel Edison and Arduino Efficiently build and program home automation and IoT projects with Intel Edison Master the skills of creating enticing projects with Intel Edison. Who This Book Is For If you are a hobbyist, robot engineer, IoT enthusiast, programmer, or developer who wants to create autonomous projects with Intel Edison, then this book is for you. Prior programming knowledge would be beneficial. What You Will Learn Program your device using the Arduino processor language, Python, and Node.js Interface different sensors with the Intel Edison Build a home automation system using MQTT, Android, and WPF Perform face detection using Intel Edison Develop a high-speed line follower robot Control a robot using a PC application and an custom controller In Detail Change the way you look at embedded electronics with Intel Edison. It is a small computing platform packed with a set of robust features to deliver hands-on performance, durability, and software support. This book is a perfect place to kickstart development and rapid prototyping using Intel Edison. It will start by introducing readers to the Intel Edison board and explaining how to get started with it. You will learn how to build a mini weather station, which will help you to acquire temperature and smoke level and push it to the IoT platform. Then you will see how to build a home automation device and control your appliances using an Android app. Furthermore, we will build a security system using a webcam to detect faces and perform voice recognition. Toward the end, the book will demonstrate how you can build two robots, which will be based on different line sensing sensors and can be controlled by a PC. The book will guide the readers through each and every step of execution of a project, using Intel Edison. Style and approach A project-based guide that will take the readers through various domains of projects like robotics, IoT and so on.

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