An Open Source Simulator For Cognitive Robotics Research

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Homo Migrans
2019 IEEE International Conference on Communications, Control, and Computing Technologies for Smart Grids (SmartGridComm)
Smart Grid and Enabling Technologies
Simulating Nonlinear Circuits with Python Power Electronics
Artificial Intelligence Applications and Innovations
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Simulation of Robotic Environment for Quadcopters Using Open Source Software
Biomedical Simulation
Multi-Disciplinary Advancement in Open Source Software and Processes

RoboCup 2013: Robot World Cup XVII
Problem Solving for Wireless Sensor Networks
Design and Implementation of an Autonomous Robotics Simulator
An Open Source Co-simulation Platform for Self-driving Vehicles
Proceedings of the 4th International Conference on Big Data Analytics for Cyber-Physical System in Smart City - Volume 1
Flight Simulation Software
Open Source Opens Opportunities for Army's Simulation System
OpenSim

GRAHAM EDDIE

OpenQUACS, an Open-source Quantum Computation Simulator in Maple
Springer Nature
Free Open Source Software have been growing enormously in the field of information technology. Open Source Software (OSS) is a software whose source code is accessible for alteration or enrichment by other programmers. This book gives a detailed analysis of open source software and their fundamentals, and so is meant for the beginners who want to learn and write programs using Open Source Software. It also educates on how to download and

instal these open source free software in the system.The topics covered in the book broadly aims to develop familiar Open Source Software (OSS) associated with database, web portal and scientific application development. Software platforms like, Android, MySQL, PHP, Python, PERL, Grid Computing, and Open Source Cloud, and their applications are explained through various examples and programs. The platforms like OSS and Linux are also introduced in the book. Recapitulation given at the end of each chapter enables the readers to take a quick revision of the topics. Numerous examples in the form of programs are given to enable the students to understand the theoretical concepts and their applicative knowledge. The book is an introductory textbook on Open Source Software (OSS) for the undergraduate students of Computer Science Engineering (CSE) and postgraduate students of Computer Application (MCA). Salient Features The procedure for installing software (Linux, Android, PHP, MySQL, Perl, and Python) both in Linux and Windows operating systems are discussed in the book.• Numerous worked out example

programs are introduced.• Inclusion of several questions drawn from previous question papers in chapter-end exercises. *Open-Source Network Simulation Tools* PHI Learning Pvt. Ltd.
This book gathers a selection of peer-reviewed papers presented at the 4th Big Data Analytics for Cyber-Physical System in Smart City (BDCPS 2022) conference, held in Bangkok, Thailand, on December 16–17. The contributions, prepared by an international team of scientists and engineers, cover the latest advances and challenges made in the field of big data analytics methods and approaches for the data-driven co-design of communicatio n, computing, and control for smart cities. Given its scope, it offers a valuable resource for all researchers and professionals interested in big data, smart cities, and cyber-physical systems. Engineering and Physical Approaches to Cancer IGI Global
With the development of computing technologies in today's modernized world, software packages have become easily accessible. Open source software, specifically, is a popular method for solving certain issues in the

field of computer science. One key challenge is analyzing big data due to the high amounts that organizations are processing. Researchers and professionals need research on the foundations of open source software programs and how they can successfully analyze statistical data. Open Source Software for Statistical Analysis of Big Data: Emerging Research and Opportunities provides emerging research exploring the theoretical and practical aspects of cost-free software possibilities for applications within data analysis and statistics with a specific focus on R and Python. Featuring coverage on a broad range of topics such as cluster analysis, time series forecasting, and machine learning, this book is ideally designed for researchers, developers, practitioners, engineers, academicians, scholars, and students who want to more fully understand in a brief and concise format the realm and technologies of open source software for big data and how it has been used to solve large-scale research problems in a multitude of disciplines.

Modelling and Simulation for Autonomous Systems

Academic Press

The quick growth of computer

technology and development of software caused it to be in a constant state of change and advancement. This advancement in software development meant that there would be many types of software developed in order to excel in usability and efficiency. Among these different types of software was open source software, one that grants permission for users to use, study, change, and distribute it freely. Due to its availability, open source software has quickly become a valuable asset to the world of computer technology and across various disciplines including education, business, and library science. The Research Anthology on Usage and Development of Open Source Software presents comprehensive research on the design and development of open source software as well as the ways in which it is used. The text discusses in depth the way in which this computer software has been made into a collaborative effort for the advancement of software technology. Discussing topics such as ISO standards, big data, fault prediction, open collaboration, and software development, this anthology is essential for computer engineers, software

developers, IT specialists and consultants, instructors, librarians, managers, executives, professionals, academicians, researchers, and students. *Software Architectures for Humanoid Robotics* IGI Global
NS-2 is an open-source discrete event network simulator which is widely used by both the research community as well as by the people involved in the standardizatio n protocols of IETF. The goal of this book is twofold: on one hand to learn how to use the NS-2 simulator, and on the other hand, to become acquainted with and to understand the operation of some of the simulated objects using NS-2 simulations. The book is intended to help students, engineers or researchers who need not have much background in programming or who want to learn through simple examples how to analyse some simulated objects using NS-2. Simulations may differ from each other in many aspects: the applications, topologies, parameters of network objects (links, nodes) and protocols used, etc. The first chapter is a general introduction to the book, where the importance of NS-2 as a tool for a good comprehensio n of networks and protocols is stated. In the next chapters we

present special topics as TCP, RED, etc., using NS-2 as a tool for better understanding the protocols. We provide in the appendices a review of Random Variables and Confidence Intervals, as well as a first sketch for using the new NS-3 simulator. Table of Contents: Introduction / NS-2 Simulator Preliminaries / How to work with trace files / Description and simulation of TCP/IP / Routing and network dynamics / RED: Random Early Discard / Differentiated Services / Mobile Networks and Wireless Local Area Networks / Classical queueing models / Tcl and C++ linkage *Fundamental Design and Automation Technologies in Offshore Robotics* John Wiley & Sons This book constitutes the thoroughly refereed post-workshop proceedings of the Third International Workshop on Modelling and Simulation for Autonomous Systems, MESAS 2016, held in Rome, Italy, in June 2016. The 33 revised full papers included in the volume ware carefully reviewed and selected from 38 submissions. They are organized in the following topical sections: human machine integration and interfaces; autonomous systems and MS frameworks and

architectures; autonomous systems principles and algorithms; unmanned aerial vehicles and remotely piloted aircraft systems; modelling and simulation application.

NS Simulator for Beginners

Frontiers Media SA Volume is indexed by Thomson Reuters BCI (WoS). The multi-functional properties of nanomaterials offer a wide range of opportunities for addressing several research and development challenges in the area of nanoscience and nanotechnology. Multi-functional nanomaterials find wide application in a variety of sectors including agriculture, medicine, telecommunications, disaster management and environmental conservation.The focus of this special topic volume is on multifunctional nanomaterial development and their emerging applications towards commercialization. This special topic illustrates a new pathway to achieve novel practical applications using nanomaterials. This special topic can be utilized as a text for researchers as well as graduate students who are interested in nanomaterials based applications. This special topic volume is multidisciplinary by nature. The readers

can acquire the necessary knowledge in physics, chemistry and biology related to these multifunctional applications which are associated with the emerging nanomaterials.

Development of an Open Source Process Simulator IGI Global

This book constitutes the refereed proceedings of five International Workshops held as parallel events of the 18th IFIP WG 12.5 International Conference on Artificial Intelligence Applications and Innovations, AIAI 2022, virtually and in Hersonissos, Crete, Greece, in June 2022: the 11th Mining Humanistic Data Workshop (MHDW 2022); the 7th 5G-Putting Intelligence to the Network Edge Workshop (5G-PINE 2022); the 1st workshop on AI in Energy, Building and Micro-Grids (AIBMG 2022); the 1st Workshop/Special Session on Machine Learning and Big Data in Health Care (ML@HC 2022); and the 2nd Workshop on Artificial Intelligence in Biomedical Engineering and Informatics (AIBEI 2022). The 35 full papers presented at these workshops were carefully reviewed and selected from 74 submissions.

Research Anthology on Usage and Development

of Open Source Software IOS Press
Flight Simulation Software Explains the many aspects of flight simulator design, including open source tools for developing an engineering flight simulator Flight simulation is an indispensable technology for civil and military aviation and the aerospace industry. Real-time simulation tools span across all aspects of aircraft development, from aerodynamics and flight dynamics to avionics and image generation systems. Knowledge of flight simulation software is vital for aerospace engineering professionals, educators, and students. Flight Simulation Software contains comprehensive and up-to-date coverage of the computer tools required to design and develop a flight simulator. Written by a noted expert with decades of experience developing flight simulators in academia, this highly practical resource enables readers to develop their own simulations with readily available open source software rather than relying on costly commercial simulation packages. The book features working

software taken from operational flight simulators and provides step-by-step guidance on software design, computer graphics, parallel processing, aircraft equations of motion, navigation and flight control systems, and more. Explains both fundamental theory and real-world practice of simulation in engineering design Covers a wide range of topics, including coding standards, software validation, user interface design, and sensor modelling Describes techniques used in modern flight simulation including distributed architectures and the use of GPUs for real-time graphics rendering Addresses unique aspects of flight simulation such as designing flight control systems, visual systems, and simulator instructor stations Includes a companion website with downloadable open-source software and additional resources Flight Simulation Software is a must-have guide for all developers and users of simulation tools, as well as the ideal textbook for relevant undergraduate and postgraduate courses in computer science, aeronautical engineering, electrical

engineering, and mechanical engineering programs.

Applications and Principles of Quantum Computing

CRC Press

One of the most significant challenges in archaeology is understanding how (and why) humans migrate. Homo Migrans examines the past, present, and future states of migration and mobility studies in archaeological discourse. Contributors draw on revolutionary twenty-first-century advances in genetics, isotope studies, and data manipulation that have resolved longstanding debates about past human movement and have helped clarify the relationships between archaeological remains and human behavior and identity. These emerging techniques have also pressed archaeologists and historians to develop models that responsibly incorporate method, theory, and data in ways that honor the complexity of human behavior and relationships. This volume articulates the challenges that lie ahead as scholars draw from genomic studies, computational science, social theory, cognitive and evolutionary studies, environmental history, and network analysis to clarify the nature of

human migration in world history. With case studies focusing on European and Mediterranean history and prehistory (as well as global history), Homo Migrans presents integrated methodologies and analyses that will interest any scholar researching migration and mobility in the human past.

E-agriculture in action: Drones for agriculture

John Wiley & Sons

SMART GRID AND ENABLING TECHNOLOGIES Discover foundational topics in smart grid technology as well as an exploration of the current and future state of the industry As the relationship between fossil fuel use and climate change becomes ever clearer, the search is on for reliable, renewable and less harmful sources of energy. Sometimes called the “electronet” or the “energy Internet,” smart grids promise to integrate renewable energy, information, and communicatio n technologies with the existing electrical grid and deliver electricity more efficiently and reliably. Smart Grid and Enabling Technologies delivers a complete vision of smart grid technology and applications, including foundational and fundamental technologies,

the technology that enables smart grids, the current state of the industry, and future trends in smart energy. The book offers readers thorough discussions of modern smart grid technology, including advanced metering infrastructure, net zero energy buildings, and communicatio n, data management, and networks in smart grids. The accomplished authors also discuss critical challenges and barriers facing the smart grid industry as well as trends likely to be of importance in its future development. Readers will also benefit from the inclusion of: A thorough introduction to smart grid architecture, including traditional grids, the fundamentals of electric power, definitions and classifications of smart grids, and the components of smart grid technology An exploration of the opportunities and challenges posed by renewable energy integration Practical discussions of power electronics in the smart grid, including power electronics converters for distributed generation, flexible alternating current transmission systems, and high voltage direct current transmission systems An analysis of distributed generation

Perfect for scientists, researchers, engineers, graduate students, and senior undergraduate students studying and working with electrical power systems and communication systems. Smart Grid and Enabling Technologies will also earn a place in the libraries of economists, government planners and regulators, policy makers, and energy stakeholders working in the smart grid field.

Medicine Meets Virtual Reality 18 Springer Science & Business Media With the increasing demands for testing Automated Vehicles (AVs) and Advanced Driver Assistance Systems (ADAS), a large-scale virtual verification and validation framework becomes valuable for three reasons. First, for AV and ADAS software testing, it is infeasible to cover on-road conditions exhaustively. Second, developing a virtual testing environment can reduce operating costs greatly. Third, software failure in AVs or ADAS is safety-critical and can result directly in fatal accidents. To address the aforementioned issues, this work focuses on developing an open-source platform for virtual testing with the capability of the generation of large-scale traffic

simulations, synchronization between traffic scenes and 3D environment, and integration with existing sensor models. Specifically, a virtual validation and verification environment framework for AV software testing is developed in this work by integrating a microscopic traffic simulator, Simulation of Urban Mobility (SUMO), with a 3D-rendering software, Unreal Engine (UE). In order to incorporate the variability in testing scenarios such as surrounding dynamic objects, obstacles, road networks, and infrastructure features, the framework provides a modular software block-set for the virtual testing of AV/ADAS controllers. This work presents the architecture of the synchronization of information from vehicles, traffic signals, and pedestrians between SUMO and UE. With the platform developed, large-scale test cases can be generated efficiently in parallel between SUMO and UE. Specific test cases can be visualized and analyzed individually. As a result, edge cases with low probability but catastrophic outcomes can be tested safely in the virtual environment.

Medicine Meets Virtual

Reality 22 State University of New York Press Engineering and Physical Approaches to Cancer addresses the newest research at this interface between cancer biology and the physical sciences. Several chapters address the mechanobiology of collective and individual cell migration, including experimental, theoretical, and computational perspectives. Other chapters consider the crosstalk of biological, chemical, and physical cues in the tumor microenvironment, including the role of senescence, polyploid giant cells, TGF-beta, metabolism, and immune cells. Further, chapters focus on circulating tumor cells and metastatic colonization, highlighting both bioengineered models as well as diagnostic technologies. Further, this book features the work of emerging and diverse investigators in this field, who have already made impressive cross-disciplinary scientific contributions. This book is designed for a general audience, particularly researchers conversant in cancer biology but less familiar with engineering (and vice-versa). Thus, we envision that this book will be suitable for faculty, postdoctoral

fellows, and advanced graduate students across medicine, biological sciences, and engineering. We also anticipate this book will be of interest to medical professionals and trainees, as well as researchers in the pharmaceutical and biomedical device industry. Describes physical aspects of cancer, including collective cell migration, the aberrant tumor microenvironment, circulating tumor cells, and metastatic colonization. First volume available on the topic of physical aspects of cancer

Digital Transformation in Education and Artificial Intelligence Application

IOS Press

This book constitutes selected papers presented during the First International Conference on Digitization in Education, MoStart 2023, held in Mostar, Bosnia and Herzegovina, in April 2023. The 12 presented papers were thoroughly reviewed and selected from the 30 submissions. The proceedings cover a diverse range of topics, including artificial intelligence and robotics in education, games and simulations, intelligent tutoring systems, augmented and virtual reality, natural language

processing, computer vision, IoT and metaverse applications, learning analytics, deep learning, and ethical issues in AI applications in education and law.

Multi-Functional Nanomaterials and their Emerging Applications

Springer

This conference seeks to bring together researchers and practitioners around the world who are leveraging and developing Information and Communication technology for the intelligent electricity network with attendant economic, environmental, and societal benefits The scope of this conference is on control, communication and power energy management in electrical grids The conference is cross disciplinary and covers aspects on the related fields

Recent Advances in Network Simulation

Trans Tech Publications Ltd

The FAO-ITU E-agriculture strategy guide (available at http://www.fao.org/3/a-i5564e.pdf) is actively being used to assist countries in the successful identification, development and implementation of sustainable ICT solutions for agriculture.The use of unmanned aerial vehicles (UAVs), also known as drones, and connected analytics has great potential

to support and address some of the most pressing problems faced by agriculture in terms of access to actionable real-time quality data. Goldman Sachs predicts that the agriculture sector will be the second largest user of drones in the world in the next five years. Sensor networks based on the Internet of things (IoT) are increasingly being used in the agriculture sector to meet the challenge of harvesting meaningful and actionable information from the big data generated by these systems. This publication is the second in the series titled E-agriculture in action (2016), launched by FAO and ITU, and builds on the previous FAO publications that highlight the use of ICT for agriculture such as Mobile technologies for agriculture and rural development (2012), Information and communication technologies for agriculture and rural development (2013) and Success stories on information and communication technologies for agriculture and rural development (2015). The ultimate aim is to promote successful, scalable, sustainable and replicable ICT for agriculture (ICT4Ag) solutions. Open Source Software for Statistical Analysis of Big Data:

Emerging Research and Opportunities Springer
The One Semi-Automated Forces (OneSAF) Objective System is the U.S. Army's next-generation, entity-level, simulation system planned to provide a comprehensive set of tools supporting computer-based simulation event setup, execution, and review. Postured as an open-architecture, open-source application, the OneSAF program will put this software into the hands of a vast number of developers throughout the Department of Defense with the intent of creating unprecedented participation across the modeling and simulation community to include multi-service, international, industry, and academia experts in the evolution of the OneSAF system. This article describes the factors that led OneSAF to an open source development methodology, the open source principles OneSAF is supporting, and the key processes and tools supporting the open source development.
Wikipedia Handbook of Biomedical Informatics Springer
In a world driven by technology and data, classical computing faces limitations in tackling complex challenges like climate

modeling and financial risk assessment. These barriers impede our aspirations to revolutionize industries and solve intricate real-world problems. To bridge this gap, we must embrace quantum computing. Edited by Alex Khang PH, Principles and Applications of Quantum Computing is a transformative solution to this challenge. It delves into the interdisciplinary realms of computer science, physics, and mathematics, unveiling the incredible potential of quantum computing, which outperforms supercomputers by 158 million times. This technology, rooted in quantum mechanics, offers solutions to global problems and opens new frontiers in AI, cybersecurity, finance, drug development, and more. By engaging with this book, you become a pioneer in the quantum revolution, contributing to reshaping the limits of what's achievable in our digital age.

An Interactive, Physics-Based Unmanned Ground Vehicle Simulator Leveraging Open Source Gaming Technology: Progress in the Development and Application of the Virtual Autonomous Navigation Environment (VANE) Desktop

Springer Nature Robotics simulators are important tools that can save both time and money for developers. Being able to accurately and easily simulate robotic vehicles is invaluable. In the past two decades, corporations, robotics labs, and software development groups have released many robotics simulators to developers. Commercial simulators have proven to be very accurate and many are easy to use, however they are closed source and generally expensive. Open source simulators have recently had an explosion of popularity, but most are not easy to use. This thesis describes the design criteria and implementation of an easy to use open source robotics simulator. SEAR (Simulation Environment for Autonomous Robots) is designed to be an open source cross-platform 3D (3 dimensional) robotics simulator written in Java using jMonkeyEngine3 and the Bullet Physics engine. Users can import custom-designed 3D models of robotic vehicles and terrains to be used in testing their own robotics control code. Several sensor types (GPS, triple-axis accelerometer, triple-axis gyroscope, and a compass)

have been simulated and early work on infrared and ultrasonic distance sensors as well as LIDAR simulators has been undertaken. Continued development on this project will result in the fleshing out of the SEAR simulator. FUNDAMENTALS OF OPEN SOURCE SOFTWARE IGI Global Since the debut of the Medicine Meets Virtual Reality (MMVR) conference in 1992, MMVR has served as a forum for researchers harnessing IT advances for the benefit of patient diagnosis and care, medical education and procedural training. At MMVR, virtual reality becomes a theatre for medicine, where multiple senses are engaged - sight, sound and touch - and language and image fuse. Precisely because this theatre is unreal, it is a valuable tool: the risks of experimentation and failure are gone, while the opportunity to understand remains. Improvement of this tool, through steady technological progress, is the purpose of MMVR. This book presents papers delivered at the MMVR18 / NextMed conference, held in Newport Beach, California, in February 2011, with contributions from international researchers whose work creates new

devices and methods at the juncture of informatics and medicine. Subjects covered include simulation and learning, visualization and information-guided therapy, robotics and haptics, virtual reality and advanced ICT in Europe, validation of new surgical techniques, and many other applications of virtual-reality technology. As its name suggests, the NextMed conference looks forward to the expanding role that virtual reality can play in global healthcare. This overview of current technology will interest those who dedicate themselves to improving medicine through technology.

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