

Ns2 Vanet Simulation Example Codes

The book provides a comprehensive guide to vehicular social networks. The book focuses on a new class of mobile ad hoc networks that exploits social aspects applied to vehicular environments. Selected topics are related to social networking techniques, social-based routing techniques applied to vehicular networks, data dissemination in VSNs, architectures for VSNs, and novel trends and challenges in VSNs. It provides significant technical and practical insights in different aspects from a basic background on social networking, the inter-related technologies and applications to vehicular ad-hoc networks, the technical challenges, implementation and future trends.

With the current advances in technology innovation, the field of medicine and healthcare is rapidly expanding and, as a result, many different areas of human health diagnostics, treatment and care are emerging. Wireless technology is getting faster and 5G mobile technology allows the Internet of Medical Things (IoMT) to greatly improve patient care and more effectively prevent illness from developing. This book provides an overview and review of the current and anticipated changes in medicine and healthcare due to new technologies and faster communication between users and devices. This groundbreaking book presents state-of-the-art chapters on many subjects including: A review of the implications of VR and AR healthcare applications A review of current augmenting dental care An overview of typical human-computer interaction (HCI) that can help inform the development of user interface designs and novel ways to evaluate human behavior to responses in virtual reality (VR) and other new technologies A review of telemedicine technologies Building empathy in young children using augmented reality AI technologies for mobile health of stroke monitoring & rehabilitation robotics control Mobile doctor brain AI App An artificial intelligence mobile cloud computing tool Development of a robotic teaching aid for disabled children Training system design of lower limb rehabilitation robot based on virtual reality

This book presents a comprehensive coverage of the five fundamental yet intertwined pillars paving the road towards the future of connected autonomous electric vehicles and smart cities. The connectivity pillar covers all the latest advancements and various technologies on vehicle-to-everything (V2X) communications/networking and vehicular cloud computing, with special emphasis on their role towards vehicle autonomy and smart cities applications. On the other hand, the autonomy track focuses on the different efforts to improve vehicle spatiotemporal perception of its surroundings using multiple sensors and different perception technologies. Since most of CAVs are expected to run on electric power, studies on their electrification technologies, satisfaction of their charging demands, interactions with the grid, and the reliance of these components on their connectivity and autonomy, is the third pillar that this book covers. On the smart services side, the book highlights the game-changing roles CAV will play in future mobility services and intelligent transportation systems. The book also details the ground-breaking directions exploiting CAVs in broad spectrum of smart cities applications. Example of such revolutionary applications are autonomous mobility on-demand services with integration to public transit, smart homes, and buildings. The fifth and final pillar involves the illustration of security mechanisms, innovative business models, market opportunities, and societal/economic impacts resulting from the soon-to-be-deployed CAVs. This book contains an archival collection of top quality, cutting-edge and multidisciplinary research on connected autonomous electric vehicles and smart cities. The book is an authoritative reference for smart city decision makers, automotive manufacturers, utility operators, smart-mobility service providers, telecom operators, communications engineers, power engineers, vehicle charging providers, university professors, researchers, and students who would like to learn more about the advances in CAEVs connectivity, autonomy, electrification, security, and integration into smart cities and intelligent transportation systems.

The increasing power of computer technologies, the evolution of software engineering and the advent of the intelligent transport systems has prompted traffic simulation to become one of the most used approaches for traffic analysis in support of the design and evaluation of traffic systems. The ability of traffic simulation to emulate the time variability of traffic phenomena makes it a unique tool for capturing the complexity of traffic systems. In recent years, traffic simulation – and namely microscopic traffic simulation – has moved from the academic to the professional world. A wide variety of traffic simulation software is currently available on the market and it is utilized by thousands of users, consultants, researchers and public agencies. Microscopic traffic simulation based on the emulation of traffic flows from the dynamics of individual vehicles is becoming one the most attractive approaches. However, traffic simulation still lacks a unified treatment. Dozens of papers on theory and applications are published in scientific journals every year. A search of simulation-related papers and workshops through the proceedings of the last annual TRB meetings would support this assertion, as would a review of the minutes from specially dedicated meetings such as the International Symposia on Traffic Simulation (Yokohama, 2002; Lausanne, 2006; Brisbane, 2008) or the International Workshops on Traffic Modeling and Simulation (Tucson, 2001; Barcelona, 2003; Sedona, 2005; Graz 2008). Yet, the only comprehensive treatment of the subject to be found so far is in the user's manuals of various software products.

In spite of their importance and potential societal impact, there is currently no comprehensive source of information about vehicular ad hoc networks (VANETs). Cohesively integrating the state of the art in this emerging field, Vehicular Networks: From Theory to Practice elucidates many issues involved in vehicular networking, including traffic engineering, human factors studies, and novel computer science research. Divided into six broad sections, the book begins with an overview of traffic engineering issues, such as traffic monitoring and traffic flow modeling. It then introduces governmental and industrial efforts in the United States and Europe to set standards and perform field tests on the feasibility of vehicular networks. After highlighting innovative applications enabled by vehicular networks, the book discusses several networking-related issues, including routing and localization. The following section focuses on simulation, which is currently the primary method for evaluating vehicular networking systems. The final part explores the extent and impact of driver distraction with in-vehicle displays. Encompassing both introductory and advanced concepts, this guide covers the various areas that impact the design of applications for vehicular networks. It details key research challenges, offers guidance on developing future standards, and supplies valuable information on existing experimental studies.

This book constitutes the thoroughly refereed proceedings of the First International Conference on Simulation of Urban Mobility, SUMO 2013, held in Berlin, Germany, in May 2013. The 12 revised full papers presented in this book were carefully selected and reviewed from 22 submissions. The papers are organized in two topical sections: models and technical innovations and applications and surveys.

The MATSim (Multi-Agent Transport Simulation) software project was started around 2006 with the goal of generating traffic and congestion patterns by following individual synthetic travelers through their daily or weekly activity programme. It has since then evolved from a collection of stand-alone C++ programs to an integrated Java-based framework which is publicly hosted, open-source available, automatically regression tested. It is currently used by about 40 groups throughout the world. This book takes stock of the current status. The first part of the book gives an introduction to the most important concepts, with the intention of enabling a potential user to set up and run basic simulations. The second part of the book describes how the basic functionality can be extended, for example by adding schedule-based public transit, electric or autonomous cars, paratransit, or within-day replanning. For each extension, the text provides pointers to the additional documentation and to the code base. It is also discussed how people with appropriate Java programming skills can write their own extensions, and plug them into the MATSim core. The project has started from the basic idea that traffic is a consequence of human behavior, and thus humans and their behavior should be the starting point of all modelling, and with the intuition that when simulations with 100 million particles are possible in computational physics, then behavior-oriented simulations with 10 million travelers should be possible in travel behavior research. The initial implementations thus combined concepts from computational physics and complex adaptive systems with concepts from travel behavior research. The third part of the book looks at theoretical concepts that are able to describe important aspects of the simulation system; for example, under certain conditions the code becomes a Monte Carlo engine sampling from a discrete choice model. Another important aspect is the interpretation of the MATSim score as utility in the microeconomic sense, opening up a connection to benefit cost analysis. Finally, the book collects use cases as they have been undertaken with MATSim. All current users of MATSim were invited to submit their work, and many followed with sometimes crisp and short and sometimes longer contributions, always with pointers to additional references. We hope that the book will become an invitation to explore, to build and to extend agent-based modeling of travel behavior from the stable and well tested core of MATSim documented here.

This book contains the refereed proceedings of the 1st IFIP-TC6 Working Conference on Wireless-On-Demand Network Systems, WONS 2004. It was sponsored by the IFIP Working Groups 6.3 (Performance of Computer and Communication Networks) and 6.8 (Mobile and Wireless Communications), and aimed at becoming a premier international forum for discussions between researchers and practitioners interested in the evolution of Wireless Internet Access toward on-demand networking. Ad hoc, routing, localization, resource management, security, applications, performance and analytical models were topics covered in depth by technical papers in this book. The conference received 77 submissions from 22 countries, showing the worldwide interest. With so many papers to choose from, the Technical Program Committee's job, providing a conference program with the highest quality, was challenging and time consuming. We finally selected 25 full papers for presentation in the conference technical sessions. To give researchers the opportunity to present the novel ideas they are starting to explore, we included in the technical program a poster session devoted to presenting preliminary research results: 7 short papers were selected for presentation in this session. Accepted papers and posters came from 15 different countries. The technical program also included a keynote speech "Ad Hoc Wireless Networks: Protocols and Applications" by Prof. Mario Gerla, and a panel session devoted to the discussion of the conference topics between academics and industry representatives. This event would not have been possible without the enthusiasm and hard work of a number of colleagues. A special thanks to the TPC members, and all the referees, for their invaluable help in reviewing the papers for WONS 2004.

This book constitutes the proceedings of the 8th International Conference on Ad Hoc Networks, ADHOCNETS 2016, held in Ottawa, Canada, September 26-17, 2016. The 34 revised full papers presented were carefully reviewed and selected from 46 submissions. The papers provide visions, trends, challenges and opportunities in the area of ad hoc networking and emerging applications. The conference also features two workshops on ad hoc network security and vulnerability, and convergence of wireless directional network systems and software defined networking, respectively.

This book constitutes the refereed proceedings of the first International Conference on Internet of Vehicles, IOV 2014, held in Beijing, China, in September 2014. The 41 full papers presented were carefully reviewed and selected from 160 submissions. They focus on the following topics: IOV systems and applications; wireless communications, ad-hoc and sensor networks; security, privacy, IoT and big data intelligence; cloud and services computing.

Introduction to Network Simulator NS2 is a primer providing materials for NS2 beginners, whether students, professors, or researchers for understanding the architecture of Network Simulator 2 (NS2) and for incorporating simulation modules into NS2. The authors discuss the simulation architecture and the key components of NS2 including simulation-related objects, network objects, packet-related objects, and helper objects. The NS2 modules included within are nodes, links, SimpleLink objects, packets, agents, and applications. Further, the book covers three helper modules: timers, random number generators, and error models. Also included are chapters on summary of debugging, variable and packet tracing, result compilation, and examples for extending NS2. Two appendices provide the details of scripting language Tcl, OTcl and AWK, as well object oriented programming used extensively in NS2.

Networked Graphics equips programmers and designers with a thorough grounding in the techniques used to create truly network-enabled computer graphics and games. Written for graphics/game/VE developers and students, it assumes no prior knowledge of networking. The text offers a broad view of what types of different architectural patterns can be found in current systems, and readers will learn the tradeoffs in achieving system requirements on the Internet. It explains the foundations of networked graphics, then explores real systems in depth, and finally considers standards and extensions. Numerous case studies and examples with working code are featured throughout the text, covering groundbreaking academic research and military simulation systems, as well as industry-leading game designs. Everything designers need to know when developing networked graphics and games is covered in one volume - no need to consult multiple sources. The many examples throughout the text feature real simulation code in C++ and Java that developers can use in their own design experiments. Case studies describing real-world systems show how requirements and constraints can be managed.

Virtual platforms are finding widespread use in both pre- and post-silicon computer software and system development.

They reduce time to market, improve system quality, make development more efficient, and enable truly concurrent hardware/software design and bring-up. Virtual platforms increase productivity with unparalleled inspection, configuration, and injection capabilities. In combination with other types of simulators, they provide full-system simulations where computer systems can be tested together with the environment in which they operate. This book is not only about what simulation is and why it is important, it will also cover the methods of building and using simulators for computer-based systems. Inside you'll find a comprehensive book about simulation best practice and design patterns, using Simics as its base along with real-life examples to get the most out of your Simics implementation. You'll learn about: Simics architecture, model-driven development, virtual platform modelling, networking, contiguous integration, debugging, reverse execution, simulator integration, workflow optimization, tool automation, and much more. Distills decades of experience in using and building virtual platforms to help readers realize the full potential of virtual platform simulation Covers modeling related use-cases including devices, systems, extensions, and fault injection Explains how simulations can influence software development, debugging, system configuration, networking, and more Discusses how to build complete full-system simulation systems from a mix of simulators

Multicast Sockets: Practical Guide for Programmers is a hands-on, application-centric approach to multicasting (as opposed to a network-centric one) that is filled with examples, ideas, and experimentation. Each example builds on the last to introduce multicast concepts, frameworks, and APIs in an engaging manner that does not burden the reader with lots of theory and jargon. The book is an introduction to multicasting but assumes that the reader has a background in network programming and is proficient in C or Java. After reading the book, you will have a firm grasp on how to write a multicast program. Author team of instructor and application programmer is reflected in this rich instructional and practical approach to the subject material Only book available that provides a clear, concise, application-centric approach to programming multicast applications and covers several languages—C, Java, and C# on the .NET platform Covers important topics like service models, testing reachability, and addressing and scoping Includes numerous examples and exercises for programmers and students to test what they have learned

The number of users who rely on the Internet to deliver multimedia content has grown significantly in recent years. As this consumer demand grows, so, too, does our dependency on a wireless and streaming infrastructure which delivers videos, podcasts, and other multimedia. Streaming Media with Peer-to-Peer Networks: Wireless Perspectives offers insights into current and future communication technologies for a converged Internet that promises soon to be dominated by multimedia applications, at least in terms of bandwidth consumption. The book will be of interest to industry managers, and will also serve as a valuable resource to students and researchers looking to grasp the dynamic issues surrounding video streaming and wireless network development.

Data science, data engineering and knowledge engineering requires networking and communication as a backbone and have wide scope of implementation in engineering sciences. Keeping this ideology in preference, this book includes the insights that reflect the advances in these fields from upcoming researchers and leading academicians across the globe. It contains high-quality peer-reviewed papers of 'International Conference on Recent Advancement in Computer, Communication and Computational Sciences (ICRACCS 2016)', held at Janardan Rai Nagar Rajasthan Vidyapeeth University, Udaipur, India, during 25–26 November 2016. The volume covers variety of topics such as Advanced Communication Networks, Artificial Intelligence and Evolutionary Algorithms, Advanced Software Engineering and Cloud Computing, Image Processing and Computer Vision, and Security. The book will help the perspective readers from computer industry and academia to derive the advances of next generation communication and computational technology and shape them into real life applications.

This book constitutes the refereed proceedings of the 6th IFIP TC 5 International Conference on Computational Intelligence and Its Applications, CIIA 2018, held in Oran, Algeria, in May 2018. The 56 full papers presented were carefully reviewed and selected from 202 submissions. They are organized in the following topical sections: data mining and information retrieval; evolutionary computation; machine learning; optimization; planning and scheduling; wireless communication and mobile computing; Internet of Things (IoT) and decision support systems; pattern recognition and image processing; and semantic web services.

These proceedings gather cutting-edge papers exploring the principles, techniques, and applications of Microservices in Big Data Analytics. The ICETCE-2019 is the latest installment in a successful series of annual conferences that began in 2011. Every year since, it has significantly contributed to the research community in the form of numerous high-quality research papers. This year, the conference's focus was on the highly relevant area of Microservices in Big Data Analytics.

The authoritative guide to the state of the art in ad hoc wireless networking. Reflects the field's latest breakthroughs Covers media access, routing, service discovery, multicasting, power conservation, transport protocol, and much more Includes a complete narration of prototype implementation with communication performance results from practical field trials Introduces key applications for home, business, auto, and defense "Ad hoc" wireless networks eliminate the complexities of infrastructure setup and administration, enabling devices to create and join networks "on the fly"-anywhere, anytime, for virtually any application. The field is rapidly coming of age, reflecting powerful advances in protocols, systems, and real-world implementation experience. In Ad Hoc Mobile Wireless Networks, one of the field's leading researchers brings together these advances in a single consolidated and comprehensive archive. C.K. Toh covers all this, and more: Key challenges: device heterogeneity, diverse traffic profiles, mobility, and power conservation Routing protocols for ad hoc networks, including Associativity Based Routing (ABR) and other IETF MANET protocols Real-world implementation issues-including a complete prototype implementation Ad hoc wireless network performance: results obtained from the latest field trials Leading approaches to service discovery Addressing TCP over an ad hoc wireless network environment Support for multicast communications The role of Bluetooth and WAP Ad Hoc Mobile Wireless Networks introduces detailed application scenarios ranging from home and car to office and battlefield. C.K. Toh also introduces several of the field's leading projects, from Motorola's PIANO platform to UC Berkeley's "Smart Dust." Whether you're a researcher, scientist, implementer, consultant, technical manager, CTO, or student, you won't find a more authoritative and comprehensive guide to the new state of the art in ad hoc networking.

This book uses tutorials and new material to describe the basic concepts of soft-computing which potentially can be used in real-life sensor network applications. It is organized in a manner that exemplifies the use of an assortment of soft-computing applications for solving different problems in sensor networking. Written by worldwide experts, the chapters provide a balanced mixture of different problems concerning

channel access, routing, coverage, localization, lifetime maximization and target tracking using emerging soft-computing applications. As cryptocurrencies and their underlying data structure, blockchains, become further intertwined in our daily lives, a full understanding of them is essential to anyone who wants to keep up and remain informed of the future of finance. There is no better learning method than a hands-on one, and *Learn Blockchain by Building One* offers just that. Develop your own blockchain using Python with step-by-step instructions from author Daniel van Flymen, an expert in the field. You will come away with a confident working knowledge of popular cryptocurrencies such as Bitcoin and Ethereum and which foundations make them work. Through helpful exercises and real-world examples, you will understand the core concepts of peer-to-peer networking, Proof of Work, hashing, encryption, and digital signatures. *Learn Blockchain by Building One* gives you timely, real-world lessons in blockchain and cryptocurrencies that you will need as our modern society becomes increasingly digitally sophisticated. The lasting implications of such technology, such as the security of personal transactions and the role of government regulation, are not to be underestimated. Stay ahead of the curve and become a confident blockchain builder now!

What You Will Learn Develop a fully-fledged blockchain in Python Obtain a ground-up understanding of Proof of Work Grasp core cryptographic concepts, such as hashing, encryption, and digital signatures Understand how gossip protocols and peer-to-peer networking works by implementing a TCP client-server Realize the differences and trade-offs between popular blockchains such as Bitcoin and Ethereum Who This Book Is For This book is aimed at intermediate programmers in any area from finance to academia. Readers should be comfortable reading and writing basic Python.

In the era before IoT, the world wide web, internet, web 2.0 and social media made people's lives comfortable by providing web services and enabling access personal data irrespective of their location. Further, to save time and improve efficiency, there is a need for machine to machine communication, automation, smart computing and ubiquitous access to personal devices. This need gave birth to the phenomenon of Internet of Things (IoT) and further to the concept of Internet of Everything (IoE). This book aims to present different aspects of IoE, challenges faced by IoE and its applications, divided into 8 chapters. This multifaceted coverage of the various verticals and IoT layers is the main attraction of this book.

This book provides a platform of scientific interaction between the three challenging and closely linked areas of ICT-enabled-application research and development: software intensive systems, complex systems and intelligent systems. Software intensive systems strongly interact with other systems, sensors, actuators, devices, other software systems and users. More and more domains are using software intensive systems, e.g. automotive and telecommunication systems, embedded systems in general, industrial automation systems and business applications. Moreover, web services offer a new platform for enabling software intensive systems. Complex systems research is focused on the overall understanding of systems rather than their components. Complex systems are characterized by the changing environments in which they interact. They evolve and adapt through internal and external dynamic interactions. The development of intelligent systems and agents, which are increasingly characterized by their use of ontologies and their logical foundations, offer impulses for both software intensive systems and complex systems. Recent research in the field of intelligent systems, robotics, neuroscience, artificial intelligence, and cognitive sciences are vital for the future development and innovation of software intensive and complex systems.

TCP/IP Sockets in C: Practical Guide for Programmers, Second Edition is a quick and affordable way to gain the knowledge and skills needed to develop sophisticated and powerful web-based applications. The book's focused, tutorial-based approach enables the reader to master the tasks and techniques essential to virtually all client-server projects using sockets in C. This edition has been expanded to include new advancements such as support for IPv6 as well as detailed defensive programming strategies. If you program using Java, be sure to check out this book's companion, *TCP/IP Sockets in Java: Practical Guide for Programmers, 2nd Edition*. Includes completely new and expanded sections that address the IPv6 network environment, defensive programming, and the `select()` system call, thereby allowing the reader to program in accordance with the most current standards for internetworking. Streamlined and concise tutelage in conjunction with line-by-line code commentary allows readers to quickly program web-based applications without having to wade through unrelated and discursive networking tenets.

Road accidents caused by impaired and distracted driving as well as traffic congestion are on the rise, with the numbers increasing dramatically every day. Intelligent transportation systems (ITS) aim to improve the efficiency and safety of traveling by consolidating vehicle operations, managing vehicle traffic, and notifying drivers with alerts and safety messages in real time. *Vehicular Cloud Computing for Traffic Management and Systems* provides innovative research on the rapidly advancing applications of vehicle-to-vehicle and vehicle-to-infrastructure communication. It also covers the need to fully utilize vehicular ad-hoc network (VANET) resources to provide updated and dynamic information about the conditions of road traffic so that the number of road accidents can be minimized. Featuring research on topics such as identity management, computational architecture, and resource management, this book is ideally designed for urban planners, researchers, policy makers, graduate-level students, transportation engineers, and technology developers seeking current research on vehicle computational design, architecture, security, and privacy.

This book reports on advanced methods and theories in two related fields of research, Information Technology and Communication Systems. It provides professors, scientists, PhD students and engineers with a readily available guide to various approaches in Engineering Science. The book is divided into two major sections, the first of which covers Information Technology topics, including E-Learning, E-Government (egov), Data Mining, Text Mining, Ontologies, Semantic Similarity Databases, Multimedia Information Processing, and Applications. The second section addresses Communication Systems topics, including: Systems, Wireless and Network Computing, Software Security and Monitoring, Modern Antennas, and Smart Grids. The book gathers contributions presented at the International Conference on Information Technology and Communication Systems (ITCS 2017) held at the National School of Applied Sciences of Khouribga, Hassan 1st University, Morocco on March 28–29, 2017. This event was organized with the objective of bringing together researchers, developers, and practitioners from academia and industry working in all areas of Information Technology and Communication Systems. It not only highlights new methods, but also promotes collaborations between different communities working on related topics.

This proceedings volume collects the most up-to-date, comprehensive and state-of-the-art knowledge on wireless communication, sensor network, network technologies, services and application. Written by world renowned researchers, each chapter is original in content, featuring high-impact presentations and late-breaking contributions. Researchers and practitioners will find this edition a useful resource material and an inspirational read. Contents: Wireless Communications Network Technologies Services and Application Readership: Researchers, academics, professionals and graduate students in neural networks/networking, electrical & electronic engineering, and condensed matter physics.

This book presents a selection of papers from the 2017 World Conference on Information Systems and Technologies (WorldCIST'17), held between the 11st and 13th of April 2017 at Porto Santo Island, Madeira, Portugal. WorldCIST is a global forum for researchers and practitioners to present and discuss recent results and innovations, current trends, professional experiences and challenges involved in modern Information Systems and Technologies research, together with technological developments and applications. The main topics covered are: Information and Knowledge Management; Organizational Models and Information Systems; Software and Systems Modeling; Software Systems, Architectures, Applications and Tools; Multimedia Systems and Applications; Computer Networks, Mobility and Pervasive Systems; Intelligent and Decision Support Systems; Big Data Analytics and Applications; Human-Computer Interaction; Ethics, Computers & Security; Health Informatics; Information Technologies in Education; and Information Technologies in Radiocommunications.

This proceedings book presents the latest research findings, and theoretical and practical perspectives on innovative methods and development techniques related to the emerging areas of Web computing, intelligent systems and Internet computing. The Web has become an important source of information, and techniques and methodologies that extract quality information are of paramount importance for many Web and Internet applications. Data mining and knowledge discovery play a key role in many of today's major Web applications, such as e-commerce and computer security. Moreover, Web services provide a new platform for enabling service-oriented systems. The emergence of large-scale distributed computing paradigms, such as cloud computing and mobile computing systems, has opened many opportunities for collaboration services, which are at the core of any information system. Artificial intelligence (AI) is an area of computer science that builds intelligent systems and algorithms that work and react like humans. AI techniques and computational intelligence are powerful tools for learning, adaptation, reasoning and planning, and they have the potential to become enabling technologies for future intelligent networks. Research in the field of intelligent systems, robotics, neuroscience, artificial intelligence and cognitive sciences is vital for the future development and innovation of Web and Internet applications.

Cooperative connected and automated mobility (CCAM) has the potential to reshape the transportation ecosystem in a revolutionary way. Transportation systems will be safer, more efficient and more comfortable. Cars are going to be the third living space, as passengers will have the freedom to use their car to live, work and travel. Despite the massive effort devoted, both by academia and industry, to developing connected and automated vehicles, there are still many issues to be addressed, including not only scientific and technological, but also regulatory and political issues. This book, mostly centered on the scientific and technological aspects of CCAMs, features seven articles highlighting recent advances of the state of the art in different CCAM technologies. Two papers address vehicular platooning, a key application for day-1 automated driving, other presents a scheme to improve the resource utilization of vehicular networks, while another paper addresses critical train communications, proposing an architecture based on 5G, SDN and MPTCP to provide path diversity and end-to-end redundancy. One paper describes the status of roadside deployment activities and analyzes the policies and practices of cooperative driving in the European Union. Finally, two review papers, one on congestion control techniques for VANETs and the other on fault tolerance techniques for vehicular networks, conclude the book.

Modeling and Simulation of Computer Networks and Systems: Methodologies and Applications introduces you to a broad array of modeling and simulation issues related to computer networks and systems. It focuses on the theories, tools, applications and uses of modeling and simulation in order to effectively optimize networks. It describes methodologies for modeling and simulation of new generations of wireless and mobiles networks and cloud and grid computing systems. Drawing upon years of practical experience and using numerous examples and illustrative applications recognized experts in both academia and industry, discuss: Important and emerging topics in computer networks and systems including but not limited to; modeling, simulation, analysis and security of wireless and mobiles networks especially as they relate to next generation wireless networks Methodologies, strategies and tools, and strategies needed to build computer networks and systems modeling and simulation from the bottom up Different network performance metrics including, mobility, congestion, quality of service, security and more... Modeling and Simulation of Computer Networks and Systems is a must have resource for network architects, engineers and researchers who want to gain insight into optimizing network performance through the use of modeling and simulation. Discusses important and emerging topics in computer networks and Systems including but not limited to; modeling, simulation, analysis and security of wireless and mobiles networks especially as they relate to next generation wireless networks Provides the necessary methodologies, strategies and tools needed to build computer networks and systems modeling and simulation from the bottom up Includes comprehensive review and evaluation of simulation tools and methodologies and different network performance metrics including mobility, congestion, quality of service, security and more

Learn about the basics and the future of vehicular networking research with this essential guide to in- and inter-vehicle communication.

Microservices in Big Data Analytics Second International, ICETCE 2019, Rajasthan, India, February 1st-2nd 2019, Revised Selected Papers Springer Nature

[ANGLÈS] VANETs (Vehicular Ad-hoc Networks) are an emerging new technology which integrates the capabilities of new generation wireless networks to vehicles. It includes a variety of applications such as co-operative traffic monitoring, control of traffic flows, blind crossing, prevention of collisions, nearby information services and real-time detour routes computation. Another important application for VANETs is providing Internet connectivity to vehicular nodes while on the move, so that passengers can download music, send emails, book a restaurant or play games. Because of the high nodes mobility and unreliable channel conditions, VANETs have unique characteristics which pose many challenging research issues. This work is mainly focused on a key networking problem: routing protocol for VANETs. The main requirement of routing protocols is to achieve minimal communication time with minimum consumption of network resources. Many routing protocols have been developed for MANETs (Mobile Ad-hoc Networks), such as AODV (Ad-hoc On demand Distance Vector) and DSR (Dynamic Source Routing). However, VANETs differ from MANETs by their highly dynamic topology. A number of studies have been done to simulate and compare the performance of those routing protocols in various traffic conditions in VANETs. Simulation results showed that MANET routing protocols suffer from poor performances because of the characteristics of fast vehicle's movement, dynamic information exchange and relative high speed of mobile nodes. This text aims to continue the work of Roger Calzada in his final degree thesis. In that thesis, AODV was the routing protocol used during the simulation process to evaluate its performance over VANETs. The conclusion of the thesis was that AODV is not the best routing protocol to handle high mobility of nodes and short duration of routes. He proposed as future work the evaluation of existing routing protocol which considers car position, trajectories or speeds gathered via GPS (Global Positioning System) that could lead to better results. To consider the vehicle network, people can intuitively think to use the geographical position information to decide the route. Most position based routing algorithms base forwarding decision on location information. GSR (Geographical Source Routing) is a promising routing technique for VANETs and recently several routing protocols have been proposed based on it. For example, GPSR (Greedy Perimeter Stateless Routing) is one of the best known position-based protocols in literature. Basically, our project is divided in two parts: first, we make a state of the art related to the VANETs in order to find the most appropriate and recommended mobility generator and network simulator reported in literature. We also include at the end of this part the description of GPSR routing protocol. Second, from the research done in the previous part, we use VanetMobiSim as a mobility generator due to its variety models that could be tested; and NS2 as a network simulator for being one of the most used by many authors and also due to its compatibility with VanetMobiSim. Using these tools, VanetMobiSim and NS2, we carry out a performance evaluation of two routing protocols (AODV and GPSR) over VANETs. We give different values to parameters such as the number of nodes, speed, transmission range and different propagation models. Finally, we analyze and discuss the benefits of GPSR compared to AODV in vehicular scenarios.

For more than a decade, ad hoc wireless networks have galvanized the interest and sparked the imagination of researchers. Such networks consist of a set of nodes equipped with wireless interfaces and they are designed to form self-organizing and spontaneous networks. They are usually multi-hop in nature, collectively forwarding and processing data to accomplish an application task. In addition, their topologies can be highly dynamic due to the potential mobility of the nodes. All these properties, in isolation and combination, pose a plethora of research challenges as well as new application opportunities. The International Conference on Ad-Hoc Networks and Wireless (ADHOC-NOW) serves as one of the premier venues for researchers and industrial practitioners to exchange ideas in this exciting area. Following previous ADHOC-NOW conferences in Murcia, Spain (2009), Sophia Antipolis, France (2008), Morelia, Mexico (2007), Ottawa, Canada (2006), Cancun,

Mexico (2005), Vancouver, Canada (2004), Montreal, Canada (2003), and Toronto, Canada (2002), the ninth ADHOC-NOW conference took place at the University of Alberta in Edmonton, Canada, during August 20–22, 2010. As the capital city of the Province of Alberta, Edmonton is a cultural, governmental, and educational center and offers year-round world-class festivals, including the Edmonton International Fringe Theatre Festival. Edmonton is also home to North America's largest indoor shopping mall, the West Edmonton Mall. The summer in Edmonton is particularly joyful and has mild temperature and long, sunny daytime.

Wireless sensor networks have a range of applications, including military uses and in environmental monitoring. When an area of interest is inaccessible by conventional means, such a network can be deployed in ways resulting in a random distribution of the sensors. Randomly Deployed Wireless Sensor Networks offers a probabilistic method to model and analyze these networks. The book considers the network design, coverage, target detection, localization and tracking of sensors in randomly deployed wireless networks, and proposes a stochastic model. It quantifies the relationship between parameters of the network and its performance, and puts forward a communication protocol. The title provides analyses and formulas, giving engineering insight into randomly deployed wireless sensor networks. Five chapters consider the analysis of coverage performance; working modes and scheduling mechanisms; the relationship between sensor behavior and network performance properties; probabilistic forwarding routing protocols; localization methods for multiple targets and target number estimation; and experiments on target localization and tracking with a Mica sensor system. Details a probabilistic method to model and analyze randomly deployed wireless sensor networks Gives working modes and scheduling mechanisms for sensor nodes, allowing high-probability of target detection Considers the relationship between sensor behaviour and network performance and lifetime Offers probabilistic forwarding routing protocols for randomly deployed wireless sensor networks Describes a method for localizing multiple targets and estimating their number This book reports on advanced theories and methods in three related fields of research: applied physics, system science and computers. It is organized in two main parts, the first of which covers applied physics topics, including lasers and accelerators; condensed matter, soft matter and materials science; nanoscience and quantum engineering; atomic, molecular, optical and plasma physics; as well as nuclear and high-energy particle physics. It also addresses astrophysics, gravitation, earth and environmental science, as well as medical and biological physics. The second part focuses on advances in system science and computers, exploring automatic circuit control, power systems, computer communication, fluid mechanics, simulation and modeling, software engineering, data structures and applications of artificial intelligence among other areas. Offering a collection of contributions presented at the 1st International Conference on Applied Physics, System Science and Computers (APSAC 2016), the book bridges the gap between applied physics and electrical engineering. It not only to presents new methods, but also promotes collaborations between different communities working on related topics at the interface between physics and engineering, with a special focus on communication, data modeling and visualization, quantum information, applied mechanics as well as bio and geophysics.

This book provides an invaluable introduction to inter-vehicular communications, demonstrating the networking and communication technologies for reducing fatalities, improving transportation efficiency, and minimising environmental impact. This book addresses the applications and technical aspects of radio-based vehicle-to-vehicle and vehicle-to-infrastructure communication that can be established by short- and medium range communication based on wireless local area network technology (primarily IEEE 802.11). It contains a coherent treatment of the important topics and technologies contributed by leading experts in the field, covering the potential applications for and their requirements on the communications system. The authors cover physical and medium access control layer issues with focus on IEEE 802.11-based systems, and show how many of the applications benefit when information is efficiently disseminated, and the techniques that provide attractive data aggregation (also includes design of the corresponding middleware). The book also considers issues such as IT-security (means and fundamental trade-off between security and privacy), current standardization activities such as IEEE 802.11p, and the IEEE 1609 standard series. Key Features: Covers the state-of-the-art in the field of vehicular inter-networks such as safety and efficiency applications, physical and medium access control layer issues, middleware, and security Shows how vehicular networks differ from other mobile networks and illustrates the idea of vehicle-to-vehicle communications with application scenarios and with current proofs of concept worldwide Addresses current standardization activities such as IEEE 802.11p and the IEEE 1609 standard series Offers a chapter on mobility models and their use for simulation of vehicular inter-networks Provides a coherent treatment of the important topics and technologies contributed by leading academic and industry experts in the field This book provides a reference for professional automotive technologists (OEMs and suppliers), professionals in the area of Intelligent Transportation Systems, and researchers attracted to the field of wireless vehicular communications. Third and fourth year undergraduate and graduate students will also find this book of interest. For additional information please visit <http://www.vanetbook.com>

ATM is regarded as the next high speed multimedia networking paradigm. Mobile computing, which is a confluence of mobile communications, computing and networks, is changing the way people work. Wireless ATM combines wireless and ATM technologies to provide mobility support and multimedia services to mobile users. Wireless ATM and Ad-Hoc Networks: Protocols and Architectures, a consolidated reference work, presents the state of the art in wireless ATM technology. It encompasses the protocol and architectural aspects of Wireless ATM networks. The topics covered in this book include: mobile communications and computing, fundamentals of ATM and Wireless ATM, mobile routing and switch discovery, handover protocol design and implementation, mobile quality of service, unifying handover strategy for both unicast and multicast mobile connections, and roaming between Wireless ATM LANs. A novel routing protocol for ad-hoc mobile networks (also known as Cambridge Ad-hoc) is also presented in this book along with information about ETSI HIPERLAN, the RACE Mobile Broadband System, and SUPERNET. This timely book is a valuable reference source for researchers, scientists, consultants, engineers, professors and graduate students working in this new and exciting field.

Copyright: [fb7ab563ee18fc4df862c66dc74862a5](https://doi.org/10.1007/978-1-4020-7486-2)