

[PDF] A Comprehensive To Controller Area Network

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A Comprehensive Guide to Controller Area Network-Wilfried Voss 2005-01-01 A Comprehensive Guide to Controller Area Network by Wilfred Voss represents the most thoroughly researched and most complete work on CAN available in the marketplace. It includes:A Brief History of CAN, Main Characteristics, Message Frame Architecture, Message Broadcasting, Bus Arbitration, Error Detection & Fault Confinement, CAN Physical Layer, and more?

Understanding and Using the Controller Area Network Communication Protocol-Marco Di Natale 2012-01-19 This book to offers a hands-on guide to designing, analyzing and debugging a communication infrastructure based on the Controller Area Network (CAN) bus. Although the CAN bus standard is well established and currently used in most automotive systems, as well as avionics, medical systems and other devices, its features are not fully understood by most developers, who tend to misuse the network. This results in lost opportunities for better efficiency and performance. These authors offer a comprehensive range of architectural solutions and domains of analysis. It also provides formal models and analytical results, with thorough discussion of their applicability, so that it serves as an invaluable reference for researchers and students, as well as practicing engineers.

Controller Area Network-Konrad Etschberger 2001

A Comprehensive Guide to J1939-Wilfried Voss 2008 SAE J1939 has become the accepted industry standard and the vehicle network technology of choice for off-highway machines. This resource provides profound information on the J1939 message format and network management.

A Comprehensive Guide to Servo Motor Sizing-Wilfried Voss 2007-08-01 The Importance of servo motor sizing should not be underestimated. Proper motor sizing will not only result in significant cost savings by saving energy, reducing purchasing and operating costs, reducing downtime, etc.; it also helps the engineer to design better motion control systems. However, the knowledge of mechanical systems and their influence on motor speed, inertia and torque requirements seems to decline in a world where modern technology aspects, such as tuning and programming, seem to be the main focus. The motor sizing process involves a number of mathematical equations, which are most certainly documented, but not necessarily with the motor sizing process in mind. This book focuses primarily on servo motor sizing and it documents in detail the inertia and torque calculations of standard mechanical components and the motor selection process.

Controller Area Network Prototyping With Arduino-Wilfried Voss 2015-02-10 While the Arduino is not widely considered an industrial-strength solution, it provides, due to its low price and ease of programming, the perfect prototyping platform for all kinds of Controller Area Network (CAN) applications. This book, written by a leading expert on CAN technologies, guides the reader through the process of acquiring all necessary hardware and software components, the implementation of the CAN driver, and the implementation of programs (Arduino Sketches) to read, send, process, and display data from and to a CAN network. The collection of programming examples cumulates into a full-fledged USB-to-CAN Gateway communicating with a Windows/Linux PC. This book will enable you to achieve CAN functionality literally within only a few hours.

Controller Area Network Projects-Dogan Ibrahim 2011 The Controller Area Network (CAN) was originally developed to be used as a vehicle data bus system in passenger cars. Today, CAN controllers are available from over 20 manufacturers, and CAN is finding applications in other fields, such as medical, aerospace, process control, automation, and so on. This book is written for students, for practising engineers, for hobbyists, and for everyone else who may be interested to learn more about the CAN bus and its applications. The aim of this book is to teach you the basic principles of CAN networks and in addition the development of microcontroller based projects using the CAN bus. In summary, this book enables the reader to: Learn the theory of the CAN bus used in automotive industry; Learn the principles, operation, and programming of microcontrollers; Design complete microcontroller based projects using the C language; Develop complete real CAN bus projects using microcontrollers; Learn the principles of OBD systems used to debug vehicle electronics. You will learn how to design microcontroller based CAN bus nodes, build a CAN bus, develop high-level programs, and then exchange data in real-time over the bus. You will also learn how to build microcontroller hardware and interface it to LEDs, LCDs, and A/D converters. The book assumes that the reader has some knowledge on basic electronics. Knowledge of the C programming language will be useful in later chapters of the book, and familiarity with at least one member of the PIC series of microcontrollers will be an advantage, especially if the reader intends to develop microcontroller based projects using the CAN bus. The CD contains a special demo version of the mikroC compiler which supports the key microcontrollers including: PIC, dsPIC, PIC24, PIC32 and AVR. This special version additionally features an advanced CAN library of intuitive and simple-to-use functions to encourage programming with easy and comfortable development of CAN networks.

Embedded Networking with CAN and CANopen-Olaf Pfeiffer 2008-01-01 CAN (Controller Area Network) is a serial communication protocol that was originally developed for the automobile industry. CAN is far superior to conventional serial technologies such as RS232 in regards to functionality and reliability and yet CAN implementations are more cost effective. CANopen, a higher layer protocol based on CAN, provides the means to apply the ingenious CAN features to a variety of industrial-strength applications. Many users, for example in the field of medical engineering, opted for CANopen because they have to meet particularly stringent safety requirements. Similar requirements had to be considered by manufacturers of other equipment with very high safety or reliability requirements (e.g. robots, lifts and transportation systems). Providing a detailed look at both CAN and CANopen, this book examines those technologies in the context of embedded networks. There is an overview of general embedded networking and an introduction to the primary functionality provided by CANopen. Everything one needs to know to configure and operate a CANopen network using off-the-shelf components is described, along with details for those designers who want to build their own CANopen nodes. The wide variety of applications for CAN and CANopen is discussed, and instructions in developing embedded networks based on the protocol are included. In addition, references and examples using MicroCANopen, PCANopen Magic, and Vector's high-end development tools are provided.

Sae J1939 ECU Programming & Vehicle Bus Simulation with Arduino-Wilfried Voss 2015-03-23 This book, written by a leading expert in the field of Controller Area Network (CAN) technologies, represents the perfect guide to implementing an SAE J1939 protocol stack for embedded systems. The book is filled with numerous C/C++ code examples and valuable documentation of the resulting J1939 vehicle network data traffic. It explains in great detail the inner workings of the protocol through designing and transmitting J1939 data frames, receiving and processing J1939 data frames, and simulating J1939 ECUs (Electronic Control Units). Other Arduino sketches (software projects) include a J1939 network scanner, and a simple SAE J1939 to USB Gateway application with associated Windows GUI (Visual Studio C# project). The collection of sketches is concluded by the ARD1939 project, a fully functional SAE J1939 protocol stack for the Arduino Uno and Mega 2560. As an added value, the included proof of concept explains (by means of code examples and bus traffic recordings) the details of the Transport Protocol (TP) according to SAE J1939/21 (BAM Session, RTS/CTS Session) and the Address Claim Procedure according to SAE J1939/81. In combination with the low-cost and high-level user-friendliness approach of the Arduino environment, this book represents the ideal platform to learning and implementing embedded applications with the SAE J1939 protocol stack.

Controller Area Network Prototyping with Arduino-Wilfried Voss 2014-03 While the Arduino is not widely considered an industrial-strength solution, it provides, due to its low price and ease of programming, the perfect prototyping platform for all kinds of Controller Area Network (CAN) applications. This book, written by a leading expert on CAN technologies, guides the reader through the process of acquiring all necessary hardware and software components, the implementation of the CAN driver, and the implementation of programs (Arduino

Sketches) to read, send, process, and display data from and to a CAN network. The collection of programming examples cumulates into a full-fledged USB-to-CAN Gateway communicating with a Windows/Linux PC. This book will enable you to achieve CAN functionality literally within only a few hours. The topics include: Introduction to Controller Area Network Prototyping Hardware and its Variants Arduino CAN Shields CAN Driver Implementation and Library Functions Simple CAN Test Programs CAN Network Monitoring, Simulation, and Diagnostics Program CAN Data Display via Windows/Linux GUI About the Author Wilfried Voss is the author of the "Comprehensive Guide" series of technical literature covering topics like Controller Area Network (CAN), SAE J1939, Industrial Ethernet, and Servo Motor Sizing. Mr. Voss has worked in the CAN industry since 1997 and before that was a motion control engineer in the paper manufacturing industry. He has a master's degree in electrical engineering from the University of Wuppertal in Germany. During the past years, Mr. Voss conducted numerous seminars on industrial fieldbus systems such as CAN, CANopen, SAE J1939, Industrial Ethernet, and more during various Real Time Embedded And Computing Conferences (RTECC), ISA (Instrumentation, Systems, and Automation Society) conferences and various other events all over the United States and Canada."

Bosch Automotive Electrics and Automotive Electronics-Robert Bosch GmbH 2013-09-24 This is a complete reference guide to automotive electrics and electronics. This new edition of the definitive reference for automotive engineers, compiled by one of the world's largest automotive equipment suppliers, includes new and updated material. As in previous editions different topics are covered in a concise but descriptive way backed up by diagrams, graphs, photographs and tables enabling the reader to better comprehend the subject. This fifth edition revises the classical topics of the vehicle electrical systems such as system architecture, control, components and sensors. There is now greater detail on electronics and their application in the motor vehicle, including electrical energy management (EEM) and discusses the topic of inter system networking within the vehicle. It also includes a description of the concept of hybrid drive a topic that is particularly current due to its ability to reduce fuel consumption and therefore CO2 emissions.This book will benefit automotive engineers and design engineers, automotive technicians in training and mechanics and technicians in garages. It may also be of interest to teachers/lecturers and students at vocational colleges, and enthusiasts.

Automotive Ethernet-Kirsten Matheus 2014-11-27 Learn how automotive Ethernet is revolutionizing in-car networking from the experts at the core of its development. Providing an in-depth account of automotive Ethernet, from its background and development, to its future prospects, this book is ideal for industry professionals and academics alike.

CAN System Engineering-Wolfhard Lawrenz 2013-12-05 This book addresses the various challenges and open questions relating to CAN communication networks. Opening with a short introduction into the fundamentals of CAN, the book then examines the problems and solutions for the physical layout of networks, including EMC issues and topology layout. Additionally, a discussion of quality issues with a particular focus on test techniques is presented. Each chapter features a collection of illuminating insights and detailed technical information supplied by a selection of internationally-regarded experts from industry and academia. Features: presents thorough coverage of architectures, implementations and application of CAN transceiver, data link layer and so-called higher layer software; explains CAN EMC characteristics and countermeasures, as well as how to design CAN networks; demonstrates how to practically apply and test CAN systems; includes examples of real networks from diverse applications in automotive engineering, avionics, and home heating technology.

Modeling Our World-Michael Zeiler 1999 Geographic data models are digital frameworks that describe the location and characteristics of things in the world around us. With a geographic information system, we can use these models as lenses to see, interpret, and analyze the infinite complexity of our natural and man-made environments. With the geodatabase, a new geographic data model introduced with ArcInfo 8, you can extend significantly the level of detail and range of accuracy with which you can model geographic reality in a database environment.

The Car Hacker's Handbook-Craig Smith 2016-03-01 Modern cars are more computerized than ever. Infotainment and navigation systems, Wi-Fi, automatic software updates, and other innovations aim to make driving more convenient. But vehicle technologies haven't kept pace with today's more hostile security environment, leaving millions vulnerable to attack. The Car Hacker's Handbook will give you a deeper understanding of the computer systems and embedded software in modern vehicles. It begins by examining vulnerabilities and providing detailed explanations of communications over the CAN bus and between devices and systems. Then, once you have an understanding of a vehicle's communication network, you'll learn how to intercept data and perform specific hacks to track vehicles, unlock doors, glitch engines, flood communication, and more. With a focus on low-cost, open source hacking tools such as Metasploit, Wireshark, Kayak, can-utils, and ChipWhisperer, the Car Hacker's Handbook will show you how to: -Build an accurate threat model for your vehicle -Reverse engineer the CAN bus to fake engine signals -Exploit vulnerabilities in diagnostic and data-logging systems -Hack the ECU and other firmware and embedded systems -Feed exploits through infotainment and vehicle-to-vehicle communication systems -Override factory settings with performance-tuning techniques -Build physical and virtual test benches to try out exploits safely If you're curious about automotive security and have the urge to hack a two-ton computer, make The Car Hacker's Handbook your first stop.

Automotive Computer Network Repair-Mandy Concepcion 2011-10-06 Automotive Computer Network Repair (Diagnostic Strategies of Modern Automotive Systems) By Mandy Concepcion In this book we will cover the intricacies of automotive inter-module communication systems or networks. The scope of this section will also go beyond the normal needs of an automotive technician. Hence, this will probably be the most difficult part of this series to comprehend. Be patient and open minded. Always give yourself time to absorb the knowledge and do not be discouraged. Special emphasis will be placed on the CAN system (Controller Area Network), since it is now the standard. CAN is one of the 9 OBD-2 protocols. A protocol is an agreement on communications interchange. It is in essence a computer communication language and specifies signaling, wiring, size of cables used, who controls the network and voltage levels. Various protocols were used in the past, some proprietary and some generic such as ISO 9141 and SAE 1850 VPW, but the standard is now the CAN protocol. Virtually all vehicle networks now talk to each other though the CAN protocol. It is now common place to see the seat belt, SRS-Airbag, transmission, ABS-Brakes, engine and radio modules or computer talking to each other through the network. Ever wondered why your radio volume goes up when you accelerate the vehicle? That's the engine computer or module telling the radio to raise the volume due to a higher RPM and hence higher ambient noise. It is also common to see a non-shifting transmission due to a faulty network and the issue not being related to the transmission at all. Hopefully this book will shed some light on the operation and knowledge needed to tackle automotive networks in today's vehicles..... Enjoy. Table of Contents 1. INTRODUCTION * - Automotive inter-module communication systems or networks * - Asian, Domestic and European Vehicles * - Fully Networked vehicles. 2. THE NEED FOR IN-VEHICLE NETWORKING * - Use of electrical and electronic components * - Networked automotive sensors. * - Sharing of sensor information * - Weight savings and the simpler wiring harnesses * - Networking and modular systems 3. THE NEED FOR PROTOCOLS * - CAN or Controller Area Network communication protocol * - CLASS A - Low speed * - CLASS B - Medium speed * - CLASS C - High speed * - SAE (Society of Automotive Engineers) * - ISO (International Standards Organization) * - What is a Gateway? 4. NETWORKING ESSENTIALS * - the 7-layer ISO/OSI reference model * - PHYSICAL LAYER * - DATA LINK LAYER * - APPLICATION LAYER * - Medium Access * - CARRIER SENSE MULTIPLE ACCESS or CSMA * - Network latency * - The Topology of a network * - The STAR topology * - The BUS topology * - The TREE topology * - The RING topology 5. DIFFERENT COMMUNICATION NETWORK * - The CCD data bus (Chrysler Collision Detection) * - CCD bus ground * - CCD bus bias voltage * - OEM scan tool (DRB III) * - NO TERMINATION message fault * - The PCI bus (Programmable Communications Interface) * - A CSMA/CD media access scheme * - The Header, DATA, CRC, IFR and EOF elements * - DCL (Data Communications Link) * - circuit 914 and 915 * - SCP (J1850) (Standard Corporate Protocol) * - Dual wire twisted pair bus topology * - The ISO 9141 protocol * - The NGS "DATA LINK DIAGNOSTICS" menu option * - GM (Data Line) UART Serial Communications * - UART data line communications * - GM CLASS 2 data bus * - State of health messages * - The Tech-2 scanner has a dynamic menu configuration * - The Tech-2's PING-ALL-MODULES 6. CAN (Controller Area Network) * - implementation of the CAN protocol * - 11 bit and 29 bit identifier * - EPA approved for MY 2003 and up * - CAN A, B and C * - MID and PID CAN identifiers * - Master time-keeper-node * - Drive-by-wire systems * - Byteflight, Flexray, and Time-triggered CAN or TTCAN * - The CAN Data-Frame * - The

CAN bus-access arbitration * - SOF (start-of-frame) bit * - Control bit * - Arbitration bits * - Data bits * - EOF or end of frame bit

Hacking Connected Cars-Alissa Knight 2020-02-25 A field manual on contextualizing cyber threats, vulnerabilities, and risks to connected cars through penetration testing and risk assessment Hacking Connected Cars deconstructs the tactics, techniques, and procedures (TTPs) used to hack into connected cars and autonomous vehicles to help you identify and mitigate vulnerabilities affecting cyber-physical vehicles. Written by a veteran of risk management and penetration testing of IoT devices and connected cars, this book provides a detailed account of how to perform penetration testing, threat modeling, and risk assessments of telematics control units and infotainment systems. This book demonstrates how vulnerabilities in wireless networking, Bluetooth, and GSM can be exploited to affect confidentiality, integrity, and availability of connected cars. Passenger vehicles have experienced a massive increase in connectivity over the past five years, and the trend will only continue to grow with the expansion of The Internet of Things and increasing consumer demand for always-on connectivity. Manufacturers and OEMs need the ability to push updates without requiring service visits, but this leaves the vehicle’s systems open to attack. This book examines the issues in depth, providing cutting-edge preventative tactics that security practitioners, researchers, and vendors can use to keep connected cars safe without sacrificing connectivity. Perform penetration testing of infotainment systems and telematics control units through a step-by-step methodical guide Analyze risk levels surrounding vulnerabilities and threats that impact confidentiality, integrity, and availability Conduct penetration testing using the same tactics, techniques, and procedures used by hackers From relatively small features such as automatic parallel parking, to completely autonomous self-driving cars—all connected systems are vulnerable to attack. As connectivity becomes a way of life, the need for security expertise for in-vehicle systems is becoming increasingly urgent. Hacking Connected Cars provides practical, comprehensive guidance for keeping these vehicles secure.

Managing RAID on Linux-Derek Vadala 2003 This title shows system administrators how to put together a system that can support RAID, install Linux software RAID or a Linux support hardware RAID card, and to build a high-performance file system.

Why Chimpanzees Can't Learn Language and Only Humans Can-Herbert S. Terrace 2019-10-01 In the 1970s, the behavioral psychologist Herbert S. Terrace led a remarkable experiment to see if a chimpanzee could be taught to use language. A young ape, named “Nim Chimsky” in a nod to the linguist whose theories Terrace challenged, was raised by a family in New York and instructed in American Sign Language. Initially, Terrace thought that Nim could create sentences but later discovered that Nim’s teachers inadvertently cued his signing. Terrace concluded that Project Nim failed—not because Nim couldn’t create sentences but because he couldn’t even learn words. Language is a uniquely human quality, and attempting to find it in animals is wishful thinking at best. The failure of Project Nim meant we were no closer to understanding where language comes from. In this book, Terrace revisits Project Nim to offer a novel view of the origins of human language. In contrast to both Noam Chomsky and his critics, Terrace contends that words, as much as grammar, are the cornerstones of language. Retracing human evolution and developmental psychology, he shows that nonverbal interaction is the foundation of infant language acquisition, leading up to a child’s first words. By placing words and conversation before grammar, we can, for the first time, account for the evolutionary basis of language. Terrace argues that this theory explains Nim’s inability to acquire words and, more broadly, the differences between human and animal communication. Why Chimpanzees Can’t Learn Language and Only Humans Can is a masterful statement of the nature of language and what it means to be human.

Attention-Addie Johnson 2004 Attention: Theory and Practice provides a balance between a readable overview of attention and an emphasis on how theories and paradigms for the study of attention have developed. The book highlights the important issues and major findings while giving sufficient details of experimental studies, models, and theories so that results and conclusions are easy to follow and evaluate. Rather than brushing over tricky technical details, the authors explain them clearly, giving readers the benefit of understanding the motivation for and techniques of the experiments in order to allow readers to think through results, models, and theories for themselves. Attention is an accessible text for advanced undergraduate and graduate students in psychology, as well as an important resource for researchers and practitioners interested in gaining an overview of the field of attention.

Encyclopedia of Data Warehousing and Mining, Second Edition-Wang, John 2008-08-31 There are more than one billion documents on the Web, with the count continually rising at a pace of over one million new documents per day. As information increases, the motivation and interest in data warehousing and mining research and practice remains high in organizational interest. The Encyclopedia of Data Warehousing and Mining, Second Edition, offers thorough exposure to the issues of importance in the rapidly changing field of data warehousing and mining. This essential reference source informs decision makers, problem solvers, and data mining specialists in business, academia, government, and other settings with over 300 entries on theories, methodologies, functionalities, and applications.

Airborne Wind Energy-Roland Schmehl 2018-03-31 This book provides in-depth coverage of the latest research and development activities concerning innovative wind energy technologies intended to replace fossil fuels on an economical basis. A characteristic feature of the various conversion concepts discussed is the use of tethered flying devices to substantially reduce the material consumption per installed unit and to access wind energy at higher altitudes, where the wind is more consistent. The introductory chapter describes the emergence and economic dimension of airborne wind energy. Focusing on “Fundamentals, Modeling & Simulation”, Part I includes six contributions that describe quasi-steady as well as dynamic models and simulations of airborne wind energy systems or individual components. Shifting the spotlight to “Control, Optimization & Flight State Measurement”, Part II combines one chapter on measurement techniques with five chapters on control of kite and ground stations, and two chapters on optimization. Part III on “Concept Design & Analysis” includes three chapters that present and analyze novel harvesting concepts as well as two chapters on system component design. Part IV, which centers on “Implemented Concepts”, presents five chapters on established system concepts and one chapter about a subsystem for automatic launching and landing of kites. In closing, Part V focuses with four chapters on “Technology Deployment” related to market and financing strategies, as well as on regulation and the environment. The book builds on the success of the first volume “Airborne Wind Energy” (Springer, 2013), and offers a self-contained reference guide for researchers, scientists, professionals and students. The respective chapters were contributed by a broad variety of authors: academics, practicing engineers and inventors, all of whom are experts in their respective fields.

Data Acquisition from HD Vehicles Using J1939 CAN Bus-E. Walter 2016-07

802.11ac: A Survival Guide-Matthew S. Gast 2013-07-23 The next frontier for wireless LANs is 802.11ac, a standard that increases throughput beyond one gigabit per second. This concise guide provides in-depth information to help you plan for 802.11ac, with technical details on design, network operations, deployment, and monitoring. Author Matthew Gast—an industry expert who led the development of 802.11-2012 and security task groups at the Wi-Fi Alliance—explains how 802.11ac will not only increase the speed of your network, but its capacity as well. Whether you need to serve more clients with your current level of throughput, or serve your existing client load with higher throughput, 802.11ac is the solution. This book gets you started. Understand how the 802.11ac protocol works to improve the speed and capacity of a wireless LAN Explore how beamforming increases speed capacity by improving link margin, and lays the foundation for multi-user MIMO Learn how multi-user MIMO increases capacity by enabling an AP to send data to multiple clients simultaneously Plan when and how to upgrade your network to 802.11ac by evaluating client devices, applications, and network connections

Nonblocking Supervisory Control of State Tree Structures-Chuan Ma 2005-05-04 This monograph proposes how to manage complexity by organizing the system as a State Tree Structure (STS). Based on STS, which is an adaptation of statecharts to Supervisory Control Theory, an efficient recursive symbolic algorithm is presented that can perform nonblocking supervisory control design in reasonable time and memory for complex systems. Nonblocking Supervisory Control of State Tree Structures presents how this results in tractable and highly comprehensible controllers, especially to users who are not specialists in Discrete - Event Systems.

Python Essential Reference-David Beazley 2009-06-29 Python Essential Reference is the definitive reference guide to the Python programming language — the one authoritative handbook that reliably untangles and explains both the core Python language and the most essential parts of the Python library. Designed for the professional programmer, the book is concise, to the point, and highly accessible. It also includes detailed information on the Python library and many advanced subjects that is not available in either the official Python documentation or any

other single reference source. Thoroughly updated to reflect the significant new programming language features and library modules that have been introduced in Python 2.6 and Python 3, the fourth edition of Python Essential Reference is the definitive guide for programmers who need to modernize existing Python code or who are planning an eventual migration to Python 3. Programmers starting a new Python project will find detailed coverage of contemporary Python programming idioms. This fourth edition of Python Essential Reference features numerous improvements, additions, and updates: Coverage of new language features, libraries, and modules Practical coverage of Python's more advanced features including generators, coroutines, closures, metaclasses, and decorators Expanded coverage of library modules related to concurrent programming including threads, subprocesses, and the new multiprocessing module Up-to-the-minute coverage of how to use Python 2.6's forward compatibility mode to evaluate code for Python 3 compatibility Improved organization for even faster answers and better usability Updates to reflect modern Python programming style and idioms Updated and improved example code Deep coverage of low-level system and networking library modules — including options not covered in the standard documentation

The Purchasing Chessboard-Christian Schuh 2011-11-27 The approach used on a given spend item should largely depend on the balance between supply power and demand power. That is the logic behind the bestselling Purchasing Chessboard®, used by hundreds of corporations worldwide to reduce costs and increase value with suppliers. The 64 squares in the Purchasing Chessboard provide a rich reservoir of methods that can be applied either individually or combined. And because many of these methods are not customarily used by procurement, the Purchasing Chessboard is also the perfect tool for helping buyers to think and act outside the box and find new solutions. A well-proven concept that works across all industries and all categories in any given situation, it is little wonder that business leaders and procurement professionals alike are excited by, and enjoy strategizing around, the Purchasing Chessboard. This second edition of The Purchasing Chessboard addresses the new realities of a highly volatile economic environment and describes the many—sometimes surprising—ways in which the Purchasing Chessboard is being used in today's business world. Yet despite all of the great achievements of procurement executives and their teams, they do not always receive the recognition they deserve. In response, the authors have developed and outlined within the book an unequivocal approach to measure procurement's impact on a company's performance—Return on Supply Management Assets (ROSMA®).

Airplane Flying Handbook (FAA-H-8083-3A)-Federal Aviation Administration 2011-09 A vital resource for pilots, instructors, and students, from the most trusted source of aeronautic information.

Automotive Ethernet-Colt Correa 2014-10-20 Featuring a foreword by Bob Metcalfe, inventor of Ethernet! Ethernet, the most widely-used local area networking technology in the world, is moving from the server rooms of automobile manufacturers to their vehicles. As the quantity and variety of electronic devices in cars continues to grow, Ethernet promises to improve performance and enable increasingly powerful and useful applications in vehicles. Now, from Intrepid Control Systems (www.intrepidcs.com) - a leader in the world of automotive networking and diagnostic tools - comes the first book to describe the technology behind the biggest revolution in automotive networking since the 1980s: Automotive Ethernet - The Definitive Guide describes the fundamentals of networking, data link and physical layers of industry-standard Ethernet variants, as well as the new (one twisted pair 100Base Ethernet) 1TPCE or BroadR-Reach technology developed by Broadcom specifically for vehicle use. Topics covered include: in-vehicle networking requirements, comparing Ethernet to CAN and other existing networks (such as LIN, MOST, and FlexRay), TCP/UDP, IPv4/IPv6 and Diagnostics over IP (DoIP). Also covered are the Audio Video Bridging standards used to transport media over Ethernet: Stream Reservation Protocol or SRP (802.1Qat), Forward-Queueing and Time-Sensitive Streams or FQTSS (802.1Qav), Timing and Synchronization for Time-Sensitive Applications or gPTP (802.1as), and Transport Protocol for Time-Sensitive Applications or AVTP (IEEE 1722), and more. Automotive Ethernet: The Definitive Guide will also be available as an ebook for your Kindle!

Implementing Scalable CAN Security with CANcrypt-Olaf Pfeiffer 2017-03-31

Intelligent Systems in Cybernetics and Automation Theory-Radek Silhavy 2015-04-24 This volume is based on the research papers presented in the 4th Computer Science On-line Conference. The volume Intelligent Systems in Cybernetics and Automation Control Theory presents new approaches and methods to real-world problems, and in particular, exploratory research that describes novel approaches in the field of cybernetics and automation control theory. Particular emphasis is laid on modern trends in selected fields of interest. New algorithms or methods in a variety of fields are also presented. The Computer Science On-line Conference (CSOC2015) is intended to provide an international forum for discussions on the latest high-quality research results in all areas related to Computer Science. The addressed topics are the theoretical aspects and applications of Computer Science, Artificial Intelligences, Cybernetics, Automation Control Theory and Software Engineering.

Fowler-Martin Fowler 2012-03-09 The practice of enterprise application development has benefited from the emergence of many new enabling technologies. Multi-tiered object-oriented platforms, such as Java and .NET, have become commonplace. These new tools and technologies are capable of building powerful applications, but they are not easily implemented. Common failures in enterprise applications often occur because their developers do not understand the architectural lessons that experienced object developers have learned. Patterns of Enterprise Application Architecture is written in direct response to the stiff challenges that face enterprise application developers. The author, noted object-oriented designer Martin Fowler, noticed that despite changes in technology—from Smalltalk to CORBA to Java to .NET—the same basic design ideas can be adapted and applied to solve common problems. With the help of an expert group of contributors, Martin distills over forty recurring solutions into patterns. The result is an indispensable handbook of solutions that are applicable to any enterprise application platform. This book is actually two books in one. The first section is a short tutorial on developing enterprise applications, which you can read from start to finish to understand the scope of the book's lessons. The next section, the bulk of the book, is a detailed reference to the patterns themselves. Each pattern provides usage and implementation information, as well as detailed code examples in Java or C#. The entire book is also richly illustrated with UML diagrams to further explain the concepts. Armed with this book, you will have the knowledge necessary to make important architectural decisions about building an enterprise application and the proven patterns for use when building them. The topics covered include · Dividing an enterprise application into layers · The major approaches to organizing business logic · An in-depth treatment of mapping between objects and relational databases · Using Model-View-Controller to organize a Web presentation · Handling concurrency for data that spans multiple transactions · Designing distributed object interfaces

Automation Control Theory Perspectives in Intelligent Systems-Radek Silhavy 2016-04-26 The volume Automation Control Theory Perspectives in Intelligent Systems presents new approaches and methods to real-world problems, and in particular, exploratory research that describes novel approaches in the field of cybernetics and automation control theory. Particular emphasis is laid on modern trends in intelligent information technology, system monitoring and proactive management of complex objects The 5th Computer Science On-line Conference (CSOC2016) is intended to provide an international forum for discussions on the latest high-quality research results in all areas related to Computer Science. The addressed topics are the theoretical aspects and applications of Computer Science, Artificial Intelligences, Cybernetics, Automation Control Theory and Software Engineering.

English as a Global Language-David Crystal 2012-03-29 David Crystal's classic English as a Global Language considers the history, present status and future of the English language, focusing on its role as the leading international language. English has been deemed the most 'successful' language ever, with 1500 million speakers internationally, presenting a difficult task to those who wish to investigate it in its entirety. However, Crystal explores the subject in a measured but engaging way, always backing up observations with facts and figures. Written in a detailed and fascinating manner, this is a book written by an expert both for specialists in the subject and for general readers interested in the English language.

Complex Behavior in Evolutionary Robotics-Lukas König 2015-03-30 Today, autonomous robots are used in a rather limited range of applications such as exploration of inaccessible locations, cleaning floors, mowing lawns etc. However, ongoing hardware improvements (and human fantasy) steadily reveal new robotic applications of significantly higher sophistication. For such applications, the crucial bottleneck in the engineering process tends to shift from physical boundaries to controller generation. As an attempt to automatize this process, Evolutionary Robotics has successfully been used to generate robotic controllers of various types. However, a major challenge of the field remains the evolution of truly complex behavior. Furthermore, automatically created controllers often lack analyzability which makes them useless for safety-critical applications. In this book, a simple controller model based on Finite State Machines is proposed which allows a straightforward analysis of evolved behaviors. To increase the model's evolvability, a procedure is introduced which, by adapting the genotype-phenotype mapping at runtime, efficiently traverses both the behavioral search space as well as (recursively) the search space of

genotype-phenotype mappings. Furthermore, a data-driven mathematical framework is proposed which can be used to calculate the expected success of evolution in complex environments.

Understanding and Using the Controller Area Network Communication Protocol-Marco Di Natale 2012-01-19 This book offers a hands-on guide to designing, analyzing and debugging a communication infrastructure based on the Controller Area Network (CAN) bus. Although the CAN bus standard is well established and currently used in most automotive systems, as well as avionics, medical systems and other devices, its features are not fully understood by most developers, who tend to misuse the network. This results in lost opportunities for better efficiency and performance. These authors offer a comprehensive range of architectural solutions and domains of analysis. It also provides formal models and analytical results, with thorough discussion of their applicability, so that it serves as an invaluable reference for researchers and students, as well as practicing engineers.

Guide to Automotive Connectivity and Cybersecurity-Dietmar P.F. Möller 2018-03-16 This comprehensive text/reference presents an in-depth review of the state of the art of automotive connectivity and cybersecurity with regard to trends, technologies, innovations, and applications. The text describes the challenges of the global automotive market, clearly showing where the multitude of innovative activities fit within the overall effort of cutting-edge automotive innovations, and provides an ideal framework for understanding the complexity of automotive connectivity and cybersecurity. Topics and features: discusses the automotive market, automotive research and development, and automotive electrical/electronic and software technology; examines connected cars and autonomous vehicles, and methodological approaches to cybersecurity to avoid cyber-attacks against vehicles; provides an overview on the automotive industry that introduces the trends driving the automotive industry towards smart mobility and autonomous driving; reviews automotive research and development, offering background on the complexity involved in developing new vehicle models; describes the technologies essential for the evolution of connected cars, such as cyber-physical systems and the Internet of Things; presents case studies on Car2Go and car sharing, car hailing and ridesharing, connected parking, and advanced driver assistance systems; includes review questions and exercises at the end of each chapter. The insights offered by this practical guide will be of great value to graduate students, academic researchers and professionals in industry seeking to learn about the advanced methodologies in automotive connectivity and cybersecurity.

The Art of Game Design-Jesse Schell 2008-08-04 Anyone can master the fundamentals of game design - no technological expertise is necessary. The Art of Game Design: A Book of Lenses shows that the same basic principles of psychology that work for board games, card games and athletic games also are the keys to making

top-quality videogames. Good game design happens when you view your game from many different perspectives, or lenses. While touring through the unusual territory that is game design, this book gives the reader one hundred of these lenses - one hundred sets of insightful questions to ask yourself that will help make your game better. These lenses are gathered from fields as diverse as psychology, architecture, music, visual design, film, software engineering, theme park design, mathematics, writing, puzzle design, and anthropology. Anyone who reads this book will be inspired to become a better game designer - and will understand how to do it.

APPLYING UML & PATTERNS 3RD EDITION-Craig Larman 2015 Larman covers how to investigate requirements, create solutions and then translate designs into code, showing developers how to make practical use of the most significant recent developments. A summary of UML notation is included

Evaluation of HSDPA and LTE-Sebastian Caban 2011-12-12 This book explains how the performance of modern cellular wireless networks can be evaluated by measurements and simulations. With the roll-out of LTE, high data throughput is promised to be available to cellular users. In case you have ever wondered how high this throughput really is, this book is the right read for you: At first, it presents results from experimental research and simulations of the physical layer of HSDPA, WiMAX, and LTE. Next, it explains in detail how measurements on such systems need to be performed in order to achieve reproducible and repeatable results. The book further addresses how wireless links can be evaluated by means of standard-compliant link-level simulation. The major challenge in this context is their complexity when investigating complete wireless cellular networks. Consequently, it is shown how system-level simulators with a higher abstraction level can be designed such that their results still match link-level simulations. Exemplarily, the book finally presents optimizations of wireless systems over several cells. This book: Explains how the performance of modern cellular wireless networks can be evaluated by measurements and simulations. Discusses the concept of testbeds, highlighting the challenges and expectations when building them. Explains measurement techniques, including the evaluation of the measurement quality by statistical inference techniques. Presents throughput results for HSDPA, WiMAX, and LTE. Demonstrates simulators at both, link-level and system-level. Provides system-level and link-level simulators (for WiMAX and LTE) on an accompanying website (<https://www.nt.tuwien.ac.at/downloads/featured-downloads>) This book is an insightful guide for researchers and engineers working in the field of mobile radio communication as well as network planning. Advanced students studying related courses will also find the book interesting.