A Simple Sdr Receiver

A one-stop desk reference for R&D engineers involved in communications engineering, this book will not gather dust on the shelf. It brings together the essential professional reference content from leading

international contributors in the field. Material covers a wide scope of topics, including voice, computer, facsimile, video, and multimedia data technologies. * A hard-working desk reference, providing all the essential material needed by communications

engineers on a day-to-day basis * Fundamentals, key techniques, engineering best practice and rules-of-thumb together in one quick-reference sourcebook * Definitive content by the leading authors in the field
This book constitutes the thoroughly

refereed post-conference proceedings of the Second International ICST Conference on Personal Satellite Services, PSATS 2010, held in Rome, Italy, Februray 2010. The conference included a keynote speech, 4 regular technical tracks and 4 special sessions

consisting of 33 high-quality scientific papers. These cover various topics such as Satellite Communications: Coding and Modulations, Multimedia Integration, Satellite Network: Quality of Service and Architectures and Applications and

Services, as well as Delay-Tolerant Networks, Quantum Satellite Communications, Access Quality Processing and Applications of Satellite Imagery. This unified 2001 treatment of game theory focuses on finding state-of-the-art solutions to issues

surrounding the next generation of wireless and communications networks. The key results and tools of game theory are covered, as are various real-world technologies and a wide range of techniques for modeling, design and analysis.

Do you want to be

able to receive satellite images using nothing but your computer, an old TV antenna, and a $20 USB stick? Now you can. At last, the technology exists to turn your computer into a super radio receiver, capable of tuning in to FM, shortwave, amateur "ham," and even

satellite frequencies, around the world and above it. Listen to police, fire, and aircraft signals, both in the clear and encoded. And with the book's advanced antenna design, there's no limit to the signals you can receive. Combine your desktop or laptop computer with easy-to-

find, Software Defined Radio (SDR) equipment, and tune in a wide range of signals in no time at all. Then, go one step further by converting a Raspberry Pi into your own dedicated SDR device. SDR USB dongles are usually designed to receive and decode high-definition digital

television broadcasts, but the rising popularity of SDR has led to several of these devices being specifically made for - and marketed to - the software radio crowd. With step-by-step instructions, you'll have no problem getting everything up and running on both Windows and Linux.

The antenna is the final piece in the SDR puzzle: Which antenna do you use? What shape do you need? How big does it have to be? And where do you point it? Get all the answers you need and learn what's possible when it comes to picking out or building an antenna. And if you're

not particularly handy, don't worry. You can use an old-school set of rabbit ear antennas without too much modification. Discover the fun of this growing hobby and then open your ears to the hidden signals that surround you. What You Need: You will need a relatively recent computer or

laptop, running either Windows or Ubuntu Linux. You can also use a Raspberry Pi. All of the software necessary is free and open-source, and the book describes in detail where to get it and how to install it, depending on your operating system. Signal Processing for Cognitive Radios

Second International ICST Conference, PSATS 2010, Rome, Italy, February 4-5, 2010. Revised Selected Papers
Software Defined Radio for 3G
Volume 2: Advances
Identify vulnerabilities and secure your smart devices
Radio Communication Handbook

The availability of the RTL-SDR device for less than $20 brings software defined radio (SDR) to the home and work desktops of EE students, professional engineers and the maker community. The RTL-SDR can be used to acquire

and sample RF (radio frequency) signals transmitted in the frequency range 25MHz to 1.75GHz, and the MATLAB and Simulink environment can be used to develop receivers using first principles DSP (digital signal

processing) algorithms. Signals that the RTL-SDR hardware can receive include: FM radio, UHF band signals, ISM signals, GSM, 3G and LTE mobile radio, GPS and satellite signals, and any that the reader can (legally) transmit of course!

In this book we introduce readers to SDR methods by viewing and analysing downconverted RF signals in the time and frequency domains, and then provide extensive DSP enabled SDR design exercises which the reader

can learn from. The hands-on SDR design examples begin with simple AM and FM receivers, and move on to the more challenging aspects of PHY layer DSP, where receive filter chains, real-time channelisers, and advanced concepts

such as carrier synchronisers, digital PLL designs and QPSK timing and phase synchronisers are implemented. In the book we will also show how the RTL-SDR can be used with SDR transmitters to develop complete

communication systems, capable of transmitting payloads such as simple text strings, images and audio across the lab desktop.
Software defined radio (SDR) is one of the most important topics of research, and

indeed development, in the area of mobile and personal communications. SDR is viewed as an enabler of global roaming and as a unique platform for the rapid introduction of new services into existing live

networks. It therefore promises mobile communication networks a major increase in flexibility and capability. SDR brings together two key technologies of the last decade - digital radio and downloadable software. It

encompasses not only reconfiguration of the air interface parameters of handset and basestation products but also the whole mobile network, to facilitate the dynamic introduction of new functionality and mass-customised

applications to the user's terminal, post-purchase. This edited book, contributed by internationally respected researchers and industry practitioners, describes the current technological status

of radio frequency design, data conversion, reconfigurable signal processing hardware, and software issues at all levels of the protocol stack and network. The book provides a holistic treatment of SDR addressing the full

breadth of relevant technologies - radio frequency design, signal processing and software - at all levels. As such it provides a solid grounding for a new generation of wireless engineers for whom radio design in future will assume dynamic

*flexibility as a given. In particular it explores * The unique demands of SDR upon the RF subsystem and their implications for front end design methodologies * The recent concepts of the 'digital front end' and 'parametrization' *

*The role and key influence of data conversion technologies and devices within software radio, essential to robust product design * The evolution of signal processing technologies, describing new architectural*

*approaches * Requirements and options for software download * Advances in 'soft' protocols and 'on-the-fly' software reconfiguration * Management of terminal reconfiguration and its network implications * The*

*concepts of the waveform description language The book also includes coverage of * Potential breakthrough technologies, such as superconducting RSFQ technology and the possible future role of MEMS*

*in RF circuitry * Competing approaches, eg all-software radios implemented on commodity computing vs advanced processing architectures that dynamically optimise their configuration to*

match the algorithm requirements at a point in time The book opens with an introductory chapter by Stephen Blust, Chair of the ITU-R WP8F Committee and Chair of the SDR Forum presenting a framework for SDR, in terms of

definitions, evolutionary perspectives, introductory timescales and regulation. Suitable for today's engineers, technical staff and researchers within the wireless industry, the book will also appeal to

marketing and commercial managers who need to understand the basics and potential of the technology for future product development. Its balance of industrial and academic contributors also makes it suitable as a text for graduate

and post-graduate courses aiming to prepare the next generation of wireless engineers. The first book to describe RF hardware design for white space applications, including both analog and digital approaches.

Offering engineers a thorough examination of special, more advanced aspects of digital wideband receiver design, this practical book builds on fundamental resources on the topic, helping you gain a more comprehensive

understanding of the subject. This in-depth volume presents a detailed look at a complete receiver design, including the encoder. Moreover, it discusses the detection of exotic signals and provides authoritative guidance on

designing receivers used in electronic warfare. From frequency modulation and biphase shifting keys, to parameter encoders in electronic warfare receivers and the use of the simulation and probability density

function to predict the false alarm parameter, this book focuses on critical topics and techniques that help you design digital wideband receivers for top performance. The authoritative reference is supported with over 310 illustrations and

more than 180 equations.
Software Defined Radio Using MATLAB & Simulink and the RTL-SDR

RF and Digital Signal Processing for Software-Defined Radio
The Hobbyist's Guide to the RTL-

SDR
Computational Intelligence Methods in COVID-19: Surveillance, Prevention, Prediction and Diagnosis
Emerging Wireless Communication and Network Technologies

This book describes the state-of-the-art in RF, analog, and mixed-signal circuit design for Software Defined Radio (SDR). It synthesizes for analog/RF circuit

designers the most important general design approaches to take advantage of the most recent CMOS technology, which can integrate millions of transistors, as well as several

real examples from the most recent research results.
This new textbook in signals and systems provides a pedagogically rich approach to what can commonly be a

mathematically dry subject. With features like historical notes, highlighted common mistakes, and applications in controls, communications, and signal processing,

Chaparro helps students appreciate the usefulness of the techniques described in the book. Each chapter contains a section with MatLab applications. Pedagogically

rich introduction to signals and systems using historical notes, pointing out "common mistakes", and relating concepts to realistic examples throughout to

motivate learning the material Introduces both continuous and discrete systems early, then studies each (separately) in more depth later Extensive set of worked

examples and homework assignments, with applications to controls, comm unications, and signal processing throughout Provides review of all the background

math necessary to study the subject MatLab applications in every chapter This book explore the use of new technologies in the area of satellite navigation receivers. In

order to construct a reconfigurable receiver with a wide range of applications, the authors discuss receiver architecture based on softw are-defined radio techniques. The

presentation unfolds in a user-friendly style and goes from the basics to cutting-edge research. The book is aimed at applied math ematicians, electrical engineers, geodesists, and

graduate students. It may be used as a textbook in various GPS technology and signal processing courses, or as a self-study reference for anyone working with satellite

navigation receivers. This book presents cutting-edge research contributions that address various aspects of network design, optimization, implementation

, and application of cognitive radio technologies. It demonstrates how to make better utilization of the available spectrum, cognitive radios and spectrum access to

achieve effective spectrum sharing between licensed and unlicensed users. The book provides academics and researchers essential information on

current developments and future trends in cognitive radios for possible integration with the upcoming 5G networks. In addition, it includes a brief introduction to cognitive radio

networks for newcomers to the field.

Cognitive Radio Architecture

Enabling seamless connectivity while saving on hardware and energy

A Single-Frequency

Approach Proceedings of the 8th International Conference on Sciences of Electronics, Technologies of Information and Telecommunications (SETIT'18), Vol.2

Recent Trends in Image and Signal Processing in Computer Vision

Signals and Systems using MATLAB

This book, written by experts from universities and major industrial research

laboratories, is devoted to the very hot topic of cognitive radio and networking for cooperative coexistence of heterogeneous wireless networks. Selected highly relevant advanced research is presented on spectrum sensing and progress toward the realization of

accurate radio environment mapping, biomimetic learning for self-organizing networks, security threats (with a special focus on primary user emulation attack), and cognition as a tool for green next-generation networks. The research activities covered include work undertaken within the

framework of the European COST Action IC0902, which is geared towards the definition of a European platform for cognitive radio and networks. Communications engineers, R&D engineers, researchers, and students will all benefit from this complete

reference on recent advances in wireless communications and the design and implementation of cognitive radio systems and networks. Software Defined Radio makes wireless communications easier, more efficient, and more reliable. This book bridges the gap between academic

research and practical implementation. When beginning a project, practicing engineers, technical managers, and graduate students can save countless hours by considering the concepts presented in these pages. The author covers the myriad options and trade-offs available when

selecting an appropriate hardware architecture. As demonstrated here, the choice between hardware- and software-centric architecture can mean the difference between meeting an aggressive schedule and bogging down in endless design iterations. Because of the

author's experience overseeing dozens of failed and successful developments, he is able to present many real-life examples. Some of the key concepts covered are: Choosing the right architecture for the market – laboratory, military, or commercial, Hardware platforms – FPGAs,

GPPs, specialized and hybrid devices, Standardization efforts to ensure interoperability and portabilitym State-of-the-art components for radio frequency, mixed-signal, and baseband processing. The text requires only minimal knowledge of wireless communications; whenever possible,

qualitative arguments are used instead of equations. An appendix provides a quick overview of wireless communications and introduces most of the concepts the readers will need to take advantage of the material. An essential introduction to SDR, this book is sure to be

an invaluable addition to any technical bookshelf.
Cognitive radio technology is a smarter, faster, and more efficient way to transmit information to and from fixed, mobile, other wireless communication devices. Cognitive radio builds upon software-defined radio

technology. A cognitive radio system is 'aware' of its operating environment and automatically adjusts itself to maintain desired communications—it’s like having a trained operator ‘inside’ the radio making constant adjustments for maximum performance.

Operating frequency, power output, antenna orientation/beamwidth, modulation, and transmitter bandwidth are just a few of the operating parameters that can automatically be adjusted “on the fly in a cognitive radio system. Fette has constructed a cutting-edge volume that hits all of the important

issues including research, management, and support. Cognitive techniques will be discussed such as position and network awareness, infrastructure and physical and link layer concerns. Though still a nascent technology, cognitive radio is being pushed by the

US military and for mission-critical civilian communications (such as emergency and public safety services). *The first book on a revolutionary technology that will be critical to military, emergency, and public safety communications *A multi-contributed volume written by the

leaders in this exciting new area *Describes the location-determination capabilities of cognitive radio (the precise location of all units in a cognitive radio network can be determined in real time)
If you're a mobile communications engineer considering

software radio solutions, this practical resource is essential reading. It covers systems design and partitioning all the way from the antenna to the management and control software. Various options for hardware are provided including a look at current and state of the art silicon

technologies such as A/D & D/A's, DSP's, FPGA's, RCP's, ACM's & digital frequency up/down-converters.
The Engineering Foundations of Radio
XML
Software-Defined Radio for Engineers
Green Software
Defined Radios
Digital Communication

Systems Engineering with Software-Defined Radio

Software Defined Radio

Principle, Paradigm and Performance

This book presents a broad range of deep-learning applications related to vision, natural language

processing, gene expression, arbitrary object recognition, driverless cars, semantic image segmentation, deep visual residual abstraction, brain–computer interfaces, big data processing, hierarchical deep learning networks

as game-playing artefacts using regret matching, and building GPU-accelerated deep learning frameworks. Deep learning, an advanced level of machine learning technique that combines class of learning algorithms

with the use of many layers of nonlinear units, has gained considerable attention in recent times. Unlike other books on the market, this volume addresses the challenges of deep learning implementation, computation time,

and the complexity of reasoning and modeling different type of data. As such, it is a valuable and comprehensive resource for engineers, researchers, graduate students and Ph.D. scholars. The novel coronavirus disease

2019 (COVID-19) pandemic has posed a major threat to human life and health. This book is beneficial for interdisciplinary students, researchers, and professionals to understand COVID-19 and how computational

intelligence can be used for the purpose of surveillance, control, prevention, prediction, diagnosis, and potential treatment of the disease. The book contains different aspects of COVID-19 that includes

fundamental knowledge, epidemic forecast models, surveillance and tracking systems, IoT- and IoMT-based integrated systems for COVID-19, social network analysis systems for COVID-19, radiological images

(CT, X-ray) based diagnosis system, and computational intelligence and in silico drug design and drug repurposing methods against COVID-19 patients. The contributing authors of this volume are experts in their fields and

they are from various reputed universities and institutions across the world. This volume is a valuable and comprehensive resource for computer and data scientists, epidemiologists, radiologists, doctors, clinicians,

pharmaceutical professionals, along with graduate and research students of interdisciplinary and multidisciplinary sciences.
Based on the popular Artech House classic, Digital Communication Systems

Engineering with Software-Defined Radio, this book provides a practical approach to quickly learning the software-defined radio (SDR) concepts needed for work in the field. This up-to-date volume guides readers on how to

quickly prototype wireless designs using SDR for real-world testing and experimentation. This book explores advanced wireless communication techniques such as OFDM, LTE, WLA, and hardware targeting. Readers will gain an

understanding of the core concepts behind wireless hardware, such as the radio frequency front-end, analog-to-digital and digital-to-analog converters, as well as various processing technologies. Moreover, this volume includes

chapters on timing estimation, matched filtering, frame synchronization message decoding, and source coding. The orthogonal frequency division multiplexing is explained and details about HDL code generation and deployment are

provided. The book concludes with coverage of the WLAN toolbox with OFDM beacon reception and the LTE toolbox with downlink reception. Multiple case studies are provided throughout the book. Both MATLAB and Simulink source

code are included to assist readers with their projects in the field.
This two-volume book presents an unusually diverse selection of research papers, covering all major topics in the fields of information and communication

technologies and related sciences. It provides a wide-angle snapshot of current themes in information and power engineering, pursuing a cross-disciplinary approach to do so. The book gathers revised contributions that

were presented at the 2018 International Conference: Sciences of Electronics, Technologies of Information and Telecommunication (SETIT'18), held on 20–22 December 2018 in Hammamet, Tunisia. This eighth

installment of the event attracted a wealth of submissions, and the papers presented here were selected by a committee of experts and underwent additional, painstaking revision. Topics covered

include: · Information Processing · Human-Machine Interaction · Computer Science · Telecommunications and Networks · Signal Processing · Electronics · Image and Video This broad-scoped approach is

becoming increasingly popular in scientific publishing. Its aim is to encourage scholars and professionals to overcome disciplinary barriers, as demanded by current trends in the industry and in the consumer market,

which are rapidly leading toward a convergence of data-driven applications, computation, telecommunication, and energy awareness. Given its coverage, the book will benefit graduate students, researchers and practitioners who

need to keep up with the latest technological advances.
Really Cheap Software Defined Radio
Enabling Technologies Cognitive Communication and Cooperative HetNet Coexistence

Cognitive Radio: Interoperability Through Waveform Reconfiguration
Software Radio Architecture
Cognitive Radio Technology
This cutting-edge resource offers practical overview of cognitive radio, a paradigm for

wireless communications in which a network or a wireless node changes its transmission or reception parameters. The alteration of parameters is based on the active monitoring of several factors in

the external and internal radio environment. This book offers a detailed description of cognitive radio and its individual parts. Practitioners learn how the basic processing elements and their capabilities are implemented as

modular components. Moreover, the book explains how each component can be developed and tested independently, before integration with the rest of the engine. Practitioners discover how

cognitive radio uses artificial intelligence to achieve radio optimization. The book also provides an in-depth working example of the developed cognitive engine and an experimental scenario to help engineers understand its

performance and behavior.
This book introduces a new intuitive design methodology for the optimal design path for next-generation software defined radio front-ends (SDRXs). The methodology described

empowers designers to "attack" the multi-standard environment in a parallel way rather than serially, providing a critical tool for any design methodology targeting 5G circuits and systems.

Throughout the book the SDRX design follows the key wireless standards of the moment (i.e., GSM, WCDMA, LTE, Bluetooth, WLAN), since a receiver compatible with these standards is the most likely candidate for the

first design iteration in a 5G deployment. The author explains the fundamental choice the designer has to make regarding the optimal channel selection: how much of the blockers/interferers will be filtered in the analog domain

and how much will remain to be filtered in the digital domain. The system-level analysis the author describes entails the direct sampling architecture is treated as a particular case of mixer-based direct conversion

architecture. This allows readers give a power consumption budget to determine how much filtering is required on the receive path, by considering the ADC performance characteristics and the corresponding

blocker diagram. Understand the RF and Digital Signal Processing Principles Driving Software-defined Radios! Software-defined radio (SDR) technology is a configurable, low cost, and power efficient solution for multimode and

multistandard wireless designs. This book describes software-defined radio concepts and design principles from the perspective of RF and digital signal processing as performed within this system. After an introductory

overview of essential SDR concepts, this book examines signal modulation techniques, RF and digital system analysis and requirements, Nyquist and oversampled data conversion techniques, and

multirate digital signal processing.. KEY TOPICS •Modulation techniques Master analog and digital modulation schemes •RF system-design parameters Examine noise and link budget analysis and Non-linear

signal analysis and design methodology
•Essentials of baseband and bandpass sampling and gain control IF sampling architecture compared to traditional quadrature sampling, Nyquist

zones, automatic gain control, and filtering •Nyquist sampling converter architectures Analysis and design of various Nyquist data converters •Oversampled data converter architectures Analysis and design of continuous-time

and discrete-time Delta-Sigma converters
•Multirate signal processing Gain knowledge of interpolation, decimation, and fractional data rate conversion *Offers readers a powerful set of analytical and design tools

*Details real world designs
*Comprehensive coverage makes this a must have in the RF/Wireless industry
This book examines signal processing techniques for cognitive radios. The book is divided into three parts:

Part I, is an introduction to cognitive radios and presents a history of the cognitive radio (CR), and introduce their architecture, functionalities, ideal aspects, hardware platforms, and state-of-the-art developments. Dr.

Jayaweera also introduces the specific type of CR that has gained the most research attention in recent years: the CR for Dynamic Spectrum Access (DSA). Part II of the book, Theoretical Foundations, guides the reader from

classical to modern theories on statistical signal processing and inference. The author addresses detection and estimation theory, power spectrum estimation, classification, adaptive algorithms (machine learning),

and inference and decision processes. Applications to the signal processing, inference and learning problems encountered in cognitive radios are interspersed throughout with concrete and accessible examples. Part III of

the book, Signal Processing in Radios, identifies the key signal processing, inference, and learning tasks to be performed by wideband autonomous cognitive radios. The author provides signal processing

solutions to each task by relating the tasks to materials covered in Part II. Specialized chapters then discuss specific signal processing algorithms required for DSA and DSS cognitive radios. Explore Software Defined Radio

IoT Penetration Testing Cookbook

Artificial Intelligence in Wireless Communications

Use SDR to Receive Satellite Images and Space Signals

Spectrum Access and Management for Cognitive Radio Networks

Theory, Models, and Applications

Over 80 recipes to master IoT security techniques. About This Book Identify vulnerabilities in IoT device architectures and firmware using

software and hardware pentesting techniques Understand radio communication analysis with concepts such as sniffing the air and capturing radio signals A recipe based

guide that will teach you to pentest new and unique set of IoT devices. Who This Book Is For This book targets IoT developers, IoT enthusiasts, pentesters, and security

professionals who are interested in learning about IoT security. Prior knowledge of basic pentesting would be beneficial. What You Will Learn Set up an IoT pentesting

lab Explore various threat modeling concepts Exhibit the ability to analyze and exploit firmware vulnerabilities Demonstrate the automation of application binary analysis

for iOS and Android using MobSF Set up a Burp Suite and use it for web app testing Identify UART and JTAG pinouts, solder headers, and hardware debugging Get

solutions to common wireless protocols
Explore the mobile security and firmware best practices
Master various advanced IoT exploitation techniques and security

automation In Detail IoT is an upcoming trend in the IT industry today; there are a lot of IoT devices on the market, but there is a minimal understanding of how to safeguard

them. If you are a security enthusiast or pentester, this book will help you understand how to exploit and secure IoT devices. This book follows a recipe-based approach, giving

you practical experience in securing upcoming smart devices. It starts with practical recipes on how to analyze IoT device architectures and identify vulnerabilities.

Then, it focuses on enhancing your pentesting skill set, teaching you how to exploit a vulnerable IoT device, along with identifying vulnerabilities in IoT device firmware. Next,

this book teaches you how to secure embedded devices and exploit smart devices with hardware techniques. Moving forward, this book reveals advanced

hardware pentesting techniques, along with software-defined, radio-based IoT pentesting with Zigbee and Z-Wave. Finally, this book also covers how to use new and

unique pentesting techniques for different IoT devices, along with smart devices connected to the cloud. By the end of this book, you will have a fair understanding of

how to use different pentesting techniques to exploit and secure various IoT devices. Style and approach This recipe-based book will teach you how to use

advanced IoT exploitation and security automation.
A software radio is a radio whose channel modulation waveforms are defined in software. All wireless

telephones are controlled by this software. Written by the leader in the field, this book covers the technology that will allow cellular telephones to greatly expand the types of data

they can transmit.
In the span of a century, radio technology advanced from spark transmitters, through analog radios based on vacuum tubes to solid state radios

to finally software defined radios where most of the transmit and receive functionalities are implemented as programs running on specialized microprocessors.

In recent years, cognitive radio emerged, which combines a software-defined radio with an intelligent agent, and promises to deliver a new level of functionality. This new

resource addresses cognitive radio design from the perspective of interoperability with an emphasis on waveform configuration for increased flexibility and enhanced

performance. The book provides readers with an extensive discussion of the concept of interoperability, as well as discusses some of the languages that could

potentially be used for exchanging descriptions of waveforms.
Software-Defined Radio for EngineersArtech House
Special Design Topics in Digital

Wideband Receivers
A Multi-Standard Multi-Mode Approach
A Software-Defined GPS and Galileo Receiver
SDR Software Defined Radio
Starting Digital Signal

Processing in Telecommunication Engineering Digitally-Assisted Analog and RF CMOS Circuit Design for Software-Defined Radio

"This unique resource provides you

with a practical approach to quickly learning the software-defined radio concepts you need to know for your work in the field. By prototyping and evaluating actual digital communication systems capable

of performing "over-the-air" wireless data transmission and reception, this volume helps you attain a first-hand understanding of critical design trade-offs and issues. Moreover you gain a sense of the actual

"real-world" operational behavior of these systems. With the purchase of the book, you gain access to several ready-made Simulink experiments at the publisher's website. This collection of

laboratory experiments, along with several examples, enables you to successfully implement the designs discussed the book in a short period of time. These files can be executed

using MATLAB version R2011b or later. " The book covers a wide range of wireless communication and network technologies, and will help readers understand the role of wireless technologies in

applications touching on various spheres of human life, e.g. healthcare, agriculture, building smart cities, forecasting and the manufacturing industry. The book begins by discussing

advances in wireless communication, including emerging trends and research directions for network technologies. It also highlights the importance of and need to actively develop these

technologies. In turn, the book addresses different algorithms and methodologies which could be beneficial in implementing 5G Mobile Communication, Vehicular Ad-hoc Networks (VANET),

Reliable Cooperative Networks, Delay Tolerant Networks (DTN) and many more contexts related to advanced communications. It then addresses the prominence of wireless communication in

connection with the Internet of Things (IoT), Mobile Opportunistic Networks and Cognitive Radio Networks (CRN). Lastly, it presents the new horizons in architecture and building protocols for Li-

Fi (Light-Fidelity) and Wearable Sensor Technology.
An exciting new technology, described by the one who inventedit This is the first book dedicated to cognitive radio, a promisingnew

technology that is poised to revolutionize th etelecommunicati ons industry with increased wireless flexibi lity.Cognitive radio technology integrates computational intelligenceinto software-defined radio for

embedded intelligent agents thatadapt to RF environments and user needs. Using this technology,users can more fully exploit the radio spectrum and servicesavai lable from wireless

connectivity. For example, an attempt tosend a 10MB e-mail in a zone where carrier charges are high mightcause a cognitive radio to alert its user and suggest waiting untilgetting to the office to

use the LAN instead. Cognitive RadioA rchitecture examines an "ideal cognitive radio" that feat uresautonomous machine learning, computer vision, and spoken or writtenlanguage perception. The

author of this exciting new book is the inventor of thetechnology and a leader in the field. Following his st ep-by-stepintrod uction, readers can start building aware/adaptive radios andthen

make steps towards cognitive radio. After an introduction toadaptive, aware, and cognitive radio, the author develops threemajor themes in three sections: Foundations

Radio Competence User Domain Competence The book makes the design principles of cognitive radio moreaccessible to students of teleinformatics, as well as to wi relesscommunicat ions systems developers. It

therefore embraces thepractice of cognitive radio as well as the theory. In particular,the publication develops a cognitive architecture that integratesd isparate disciplines,

including autonomous machine learning ,computer vision, and language perception technologies. Anaccompanying CD-ROM contains the Java source code and compiledclass files for

applications developed in the book. In addition,for the convenience of the reader, Web resources introducing keyconcepts such as speech applications programmer interfaces (APIs)are

included. Although still five to ten years away from full deployment, telecommunicatio ns giants and research labs around the world arealready dedicating R&D to this new tech nology.Telecommu nications

engineers as well as advanced undergraduate andgraduate students can learn the promising possibilities of thisinnovative technology from the one who invented it. Note: CD-ROM/DVD and other

supplementary materials arenot included as part of eBook file. Green Software De?ned Radios, the title of this book may have originated from a lackofins piration,andthec ombinationofhard work,jetlag,andd rinkinggreentea.

The message we want to convey however, is that SDRs are a promising technology for the future, providing they are designed for ef?cient usage of scarce resources: energy and spectrum. In the

last years, the R&D teams focusing on wireless c- munication (around the world and at IMEC speci?cally), have realized great bre- throughs. It is our honor, building on this

knowledge, to bring a comprehensive overview of the essential technologies. We are grateful that Springer is willing to publish in their collection on radio technologies, a book on green

SDRs, a weird species still today, yet maybe the baseline for the day after tomorrow. Dear reader, we wish that you ?nd in the following pages, including the references, some int- esting insights, and that this book

may live more or less up to your expectations (and hopefully more than less). Thisbook'sclosin gstatesthatthequ estforGreenSDRsh asnotended,thisi sjust the beginning. Concerning this book however, we are happy that

today the opposite is true. We want to acknowledge our colleagues at IMEC for their great scienti?c contribution, and even more for the enjoyable cooperation. Personal Satellite

Services

Program and Build RPi-based Ham Station Utilities, Tools, and Instruments

Game Theory in Wireless and Communication Networks

Toward 5G Software Defined Radio Receiver

Front-Ends Communications Engineering e-Mega Reference Implementing Software Defined Radio

SDR (Software-Defined Radio) is a generic term for a device that includes a full radio tuner in a "black box" with few

or no external controls. All the tuning and output must be controlled through an external computer. This book covers the installation, setup, and operation of one particular very popular and inexpensive SDR device, the SDRplay, and the

manufacturer's version of the SDR software, called SDRuno. The SDRplay has an enormous range of frequencies available, including those for amateur radio, broadcast radio, satellite communication, TV, microwave, and a vast array of other

frequencies. Being receive-only, no special licenses are required; although it is very popular with amateur radio enthusiasts ("Hams"), anyone with appropriate computer equipment can buy and use an SDRplay. Inside you'll find step-by-step tutorials on

how to install the software, setup the device, and use your SDRplay. SDR has never been more accessible! This short book gives you a simple step-by-step walkthrough of all the options to set up your SDR receiver using many screenshots and examples. The entire

process is detailed, from registering your device to installing the software, and more. Once that's done, you can start listening and scanning the airways for audio and digital signals!

This book highlights recent advances and emerging technologies that utilize

computational intelligence in signal processing, computing, imaging science, artificial intelligence, and their applications. It covers all branches of artificial intelligence and machine learning that are based on computation at some level, e.g. artificial

neural networks, evolutionary algorithms, fuzzy systems, and automatic medical identification systems. Exploring recent trends in research and applications, the book offers a valuable resource for professors, researchers, and

engineers alike. A comprehensive guide to the RTL2832U RTL-SDR software defined radio by the authors of the RTL-SDR Blog. The RTL-SDR is a super cheap software defined radio based on DVB-T TV dongles that can be found for under $20. This book

is about tips and tutorials that show you how to get the most out of your RTL-SDR dongle. Most projects described in this book are also compatible with other wideband SDRs such as the HackRF, Airspy and SDRPlay RSP. What's in the book? Learn how to set up

your RTL-SDR with various free software defined radio programs such as SDR#, HDSDR, SDR-Radio and more. Learn all the little tricks and oddities that the dongle has. A whole chapter dedicated to improving the RTL-SDR's performance.

Dozens of tutorials for fun RTL-SDR based projects such as ADS-B aircraft radar, AIS boat radar, ACARS decoding, receiving NOAA and Meteor-M2 weather satellite images, listening to and following trunked radios, decoding digital voice P25/DMR signals,

decoding weather balloon telemetry, receiving DAB radio, analysing GSM and listening to TETRA signals, decoding pagers, receiving various HF signals such as ham radio modes, weatherfax and DRM radio, decoding digital D-STAR voice, an

introduction to GNU Radio, decoding RDS, decoding APRS, measuring filters and SWR with low cost equipment, receiving Inmarsat, Outernet and Iridium L-Band satellite data, and many many more projects! Guide to antennas, cables and adapters. Third

Edition Released 20 December 2016.

This book constitutes the proceedings of the 15th IFIP TC8 International Conference on Computer Information Systems and Industrial Management, CISIM 2016, held in Vilnius, Lithuania, in September 2016. The

63 regular papers presented together with 1 inivted paper and 5 keynotes in this volume were carefully reviewed and selected from about 89 submissions. The main topics covered are rough set methods for big data analytics; images, visualization, classification;

optimization, tuning; scheduling in manufacturing and other applications; algorithms; decisions; intelligent distributed systems; and biometrics, identification, security.

Sdr for Beginners Using the Sdrplay and Sdruno

Raspberry Pi for Radio Amateurs
White Space Communication Technologies
A Laboratory-based Course
Selected Advances on Spectrum Sensing, Learning, and Security Approaches
Object-Oriented Approaches to

Wireless Systems Engineering

This hands-on, laboratory driven textbook helps readers understand principles of digital signal processing (DSP) and basics of software-based digital communication,

particularly software-defined networks (SDN) and software-defined radio (SDR). In the book only the most important concepts are presented. Each book chapter is an introduction to computer laboratory and is accompanied

by complete laboratory exercises and ready-to-go Matlab programs with figures and comments (available at the book webpage and running also in GNU Octave 5.2 with free software packages), showing all or most details of

relevant algorithms. Students are tasked to understand programs, modify them, and apply presented concepts to recorded real RF signal or simulated received signals, with modelled transmission condition and

hardware imperfections. Teaching is done by showing examples and their modifications to different real-world telecommunication-like applications. The book consists of three parts: introduction to DSP

(spectral analysis and digital filtering), introduction to DSP advanced topics (multi-rate, adaptive, model-based and multimedia - speech, audio, video - signal analysis and processing) and

introduction to software-defined modern telecommunication systems (SDR technology, analog and digital modulations, single- and multi-carrier systems, channel estimation and correction as well as

synchronization issues). Many real signals are processed in the book, in the first part – mainly speech and audio, while in the second part – mainly RF recordings taken from RTL-SDR USB stick and

ADALM-PLUTO module, for example captured IQ data of VOR avionics signal, classical FM radio with RDS, digital DAB/DAB+ radio and 4G-LTE digital telephony. Additionally, modelling and simulation of some

transmission scenarios are tested in software in the book, in particular TETRA, ADSL and 5G signals.? Provides an introduction to digital signal processing and software-based digital

communication; Presents a transition from digital signal processing to software-defined telecommunication; Features a suite of pedagogical materials including a laboratory test-bed and computer exerci

ses/experiments??. 15th IFIP TC8 International Conference, CISIM 2016, Vilnius, Lithuania, September 14-16, 2016, Proceedings Mission-Oriented Sensor Networks and Systems: Art and Science

Computer Information Systems and Industrial Management