

8 Bit Atmel Corporation

This volume constitutes the refereed proceedings of the Third IFIP WG 11.2 International Workshop on Information Security Theory and Practice: Smart Devices, Pervasive Systems, and Ubiquitous Networks, WISTP 2009 held in Brussels, Belgium in September 2009. The 12 revised full papers presented were carefully reviewed and selected from 27 submissions for inclusion in the book; they are organized in topical sections on mobility, attacks and secure implementations, performance and security, and cryptography.

Artificial intelligence (AI) stands out as a transformational technology of the digital age. Its practical applications are growing very rapidly. One of the chief reasons AI applications are attaining prominence, is in its design to learn continuously, from real-world use and experience, and its capability to improve its performance. It is no wonder that the applications of AI span from complex high-technology equipment manufacturing to personalized exclusive recommendations to end-users. Many deployments of AI software, given its continuous learning need, require computation platforms that are resource intense, and have sustained connectivity and perpetual power through central electrical grid. In order to harvest the benefits of AI revolution to all of humanity, traditional AI software development paradigms must be upgraded to function effectively in environments that have resource constraints, small form factor computational devices with limited power, devices with intermittent or no connectivity and/or powered by non-perpetual source or battery power. The aim this book is to prepare current and future software engineering teams with the skills and tools to fully utilize AI capabilities in resource-constrained devices. The book introduces essential AI concepts from the perspectives of full-scale software development with emphasis on creating niche Blue Ocean small form factored computational environment products.

This volume includes extended and revised versions of a set of selected papers from the 2011 2nd International Conference on Education and Educational Technology (EET 2011) held in Chengdu, China, October 1-2, 2011. The mission of EET 2011 Volume 2 is to provide a forum for researchers, educators, engineers, and government officials involved in the general areas of education management, education theory and education application to disseminate their latest research results and exchange views on the future research directions of these fields. 133 related topic papers were selected into this volume. All the papers were reviewed by 2 program committee members and selected by the volume editor Prof. Yuanzhi Wang, from Intelligent Information Technology Application Research Association, Hong Kong. The conference will bring together leading researchers, engineers and scientists in the domain of interest. We hope every participant can have a good opportunity to exchange their research ideas and results and to discuss the state of the art in the areas of the education management, education theory and education application.

This is an introductory course textbook in electronics, programming, and microprocessing. It explains how to connect and control various electronic components, how to wire and read common types of sensors, and how to amplify, filter, and smooth sensor readings. This will allow the learner to start designing and building their own equipment for research projects. The course starts at a beginner level, assuming no prior knowledge in these areas. Programming and microprocessing are taught using the Arduino IDE. This book can serve as a stand-alone crash course for a self-motivated learner. It can also be directly adopted as a course textbook for an elective in a college, university, or high school context. Sections include various fun lab activities that increase in difficulty, and enough theory and practical advice to help complement the activities with understanding. Resources are provided to the instructor to organize the lectures, activities, and individual student design projects. These tools will help any reader turn their electronic project ideas into functional prototypes.

This book constitutes the refereed proceedings of the 8th China Conference of Wireless Sensor Networks, held in Xi'an, China, in October/November 2014. The 64 revised full papers were carefully reviewed and selected from 365 submissions. The papers are organized in topical sections on power control and management; network architecture and deployment; positioning and location-based services in wireless sensor networks; security and privacy; wireless communication systems and protocols; routing algorithm and transport protocols in wireless sensor networks; wireless communication protocols and sensor data quality, integrity and trustworthiness; Internet of Things; wireless mobile network architecture, in-vehicle network; indoor positioning and location-based services; applications of wireless sensor networks.

A thorough introduction to the development and applications of intelligent wearable interfaces As mobile computing, sensing technology, and artificial intelligence become more advanced and their applications more widespread, the area of intelligent wearable interfaces is growing in importance. This emerging form of human-machine interaction has infinite possibilities for enhancing humans' capabilities in communications, actions, monitoring, and control. Intelligent Wearable Interfaces is a collection of the efforts the authors have made in this area at The Chinese University of Hong Kong. They introduce methodologies to develop a variety of intelligent wearable interfaces and cover practical implementations of systems for real-life applications. A number of novel intelligent wearable interface systems are examined, including: Network architecture for wearable robots Wearable interface for automatic language translation Intelligent cap interface for wheelchair control Intelligent shoes for human-computer interface Fingertip human-computer interface Ubiquitous 3D digital writing instrument Intelligent mobile human airbag system This book is a valuable reference for researchers, designers, engineers, and upper-level undergraduate and graduate students in the fields of human-machine interactions, rehabilitation engineering, robotics, and artificial intelligence.

This book constitutes the refereed proceedings of the 15th International Conference on Information and Communications Security, ICICS 2013, held in Beijing, China, in November 2013. The 23 regular papers and 6 short papers were carefully reviewed and selected from 113 submissions. The papers are organized in topical sections on system security, Web security and worm detection, cloud storage security, virtualization for cloud computing, trusted and trustworthy computing, authentication and security protocols, intrusion detection and recovery, side channel attacks and defense, engineering issues of crypto, cryptanalysis, attribute-based encryption, and cryptographic primitives and applications.

The book, gathering the proceedings of the Future of Information and Communication Conference (FICC) 2018, is a remarkable collection of chapters covering a wide range of topics in areas of information and communication technologies and their applications to the real world. It includes 104 papers and posters by pioneering academic researchers, scientists, industrial engineers, and students from all around the world, which contribute to our understanding of relevant trends of current research on communication, data science, ambient intelligence, networking, computing, security and Internet of Things. This book collects state of the art chapters on all aspects of information science and communication technologies, from classical to intelligent, and covers both theory and applications of the latest technologies and methodologies. Presenting state-of-the-art intelligent methods

and techniques for solving real-world problems along with a vision of the future research, this book is an interesting and useful resource. The chapter "Emergency Departments" is available open access under a Creative Commons Attribution 4.0 International License via link.springer.com.

This book constitutes the refereed proceedings of the 6th International Workshop on Systems, Architectures, Modeling, and Simulation, SAMOS 2006, held in Samos, Greece on July 2006. The 47 revised full papers presented together with 2 keynote talks were thoroughly reviewed and selected from 130 submissions. The papers are organized in topical sections on system design and modeling, wireless sensor networks, processor design, dependable computing, architectures and implementations, and embedded sensor systems.

This book constitutes the thoroughly refereed post-conference proceedings of the 16th International Conference on Information and Communications Security, ICISC 2014, held in Hong Kong, China, in December 2014. The 22 revised full papers including two invited talks presented were carefully selected from 90 submissions. The papers provide the latest results in research, development and applications in the field of information security and cryptology.

Featuring contributions from major technology vendors, industry consortia, and government and private research establishments, the Industrial Communication Technology Handbook, Second Edition provides comprehensive and authoritative coverage of wire- and wireless-based specialized communication networks used in plant and factory automation, automotive applications, avionics, building automation, energy and power systems, train applications, and more. New to the Second Edition: 46 brand-new chapters and 21 substantially revised chapters Inclusion of the latest, most significant developments in specialized communication technologies and systems Addition of new application domains for specialized networks The Industrial Communication Technology Handbook, Second Edition supplies readers with a thorough understanding of the application-specific requirements for communication services and their supporting technologies. It is useful to a broad spectrum of professionals involved in the conception, design, development, standardization, and use of specialized communication networks as well as academic institutions engaged in engineering education and vocational training.

Offering comprehensive, cutting-edge coverage, THE ATMEL AVR MICROCONTROLLER: MEGA AND XMEGA IN ASSEMBLY AND C delivers a systematic introduction to the popular Atmel 8-bit AVR microcontroller with an emphasis on the MEGA and XMEGA subfamilies. It begins with a concise and complete introduction to the assembly language programming before progressing to a review of C language syntax that helps with programming the AVR microcontroller. Emphasis is placed on a wide variety of peripheral functions useful in embedded system design. Vivid examples demonstrate the applications of each peripheral function, which are programmed using both the assembly and C languages. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

This second book by the author on WSNs focuses on the concepts of energy, and energy harvesting and management techniques. Definitions and terminologies are made clear without leaning on the relaxing assumption that they are already known or easily reachable, the reader is not to be diverted from the main course. Neatly drawn figures assist in viewing and imagining the offered topics. To make energy related topics felt and seen, the adopted technologies as well as their manufacturers are presented in details. With such a depth, this book is intended for a wide audience, it is meant to be helper and motivator, for the senior undergraduates, postgraduates, researchers, and practitioners; concepts and energy related applications are laid out, research and practical issues are backed by appropriate literature, and new trends are put under focus. For senior undergraduate students, it familiarizes with conceptual foundations and practical projects implementations. Also, it is intended for graduate students working on their thesis and in need of specific knowledge on WSNs and the related energy harvesting and management techniques. Moreover, it is targeting researchers and practitioners interested in features and applications of WSNs, and on the available energy harvesting and management projects and testbeds. Exercises at the end of each chapter are not just questions and answers; they are not limited to recapitulate ideas. Their design objective is not bound to be a methodical review of the provided concepts, but rather as a motivator for lot more of searching, finding, and comparing beyond what has been presented in the book.

This book constitutes the thoroughly refereed post-conference proceedings of the 9th International Conference on Information Security and Cryptology, Inscrypt 2013, held in Guangzhou, China, in November 2013. The 21 revised full papers presented together with 4 short papers were carefully reviewed and selected from 93 submissions. The papers cover the topics of Boolean function and block cipher, sequence and stream cipher, applications: systems and theory, computational number theory, public key cryptography, has function, side-channel and leakage, and application and system security.

Many electrical and computer engineering projects involve some kind of embedded system in which a microcontroller sits at the center as the primary source of control. The recently-developed Arduino development platform includes an inexpensive hardware development board hosting an eight-bit ATMEL ATmega-family processor and a Java-based software-development environment. These features allow an embedded systems beginner the ability to focus their attention on learning how to write embedded software instead of wasting time overcoming the engineering CAD tools learning curve. The goal of this text is to introduce fundamental methods for creating embedded software in general, with a focus on ANSI C. The Arduino development platform provides a great means for accomplishing this task. As such, this work presents embedded software development using 100% ANSI C for the Arduino's ATmega328P processor. We deviate from using the Arduino-specific Wiring libraries in an attempt to provide the most general embedded methods. In this way, the reader will acquire essential knowledge necessary for work on future projects involving other processors. Particular attention is paid to the notorious issue of using C pointers in order to gain direct access to microprocessor registers, which ultimately allow control over all peripheral interfacing. Table of Contents: Introduction / ANSI C / Introduction to Arduino / Embedded Debugging / ATmega328P Architecture / General-Purpose Input/Output / Timer Ports / Analog Input Ports / Interrupt Processing / Serial Communications / Assembly Language / Non-volatile Memory

Develop the software and hardware you never think about. We're talking about the nitty-gritty behind the buttons on your microwave, inside your thermostat, inside the keyboard used to type this description, and even running the monitor on which you are reading it now. Such stuff is termed embedded systems, and this book shows how to design and develop embedded systems at a professional level. Because yes, many people quietly make a successful career doing just that. Building embedded systems can be both fun and intimidating. Putting together an embedded system requires skill sets from multiple engineering disciplines, from software and hardware in particular. Building Embedded Systems is a book about helping you do things in the right way from

the beginning of your first project: Programmers who know software will learn what they need to know about hardware. Engineers with hardware knowledge likewise will learn about the software side. Whatever your background is, *Building Embedded Systems* is the perfect book to fill in any knowledge gaps and get you started in a career programming for everyday devices. Author Changyi Gu brings more than fifteen years of experience in working his way up the ladder in the field of embedded systems. He brings knowledge of numerous approaches to embedded systems design, including the System on Programmable Chips (SOPC) approach that is currently growing to dominate the field. His knowledge and experience make *Building Embedded Systems* an excellent book for anyone wanting to enter the field, or even just to do some embedded programming as a side project. What You Will Learn Program embedded systems at the hardware level Learn current industry practices in firmware development Develop practical knowledge of embedded hardware options Create tight integration between software and hardware Practice a work flow leading to successful outcomes Build from transistor level to the system level Make sound choices between performance and cost Who This Book Is For Embedded-system engineers and intermediate electronics enthusiasts who are seeking tighter integration between software and hardware. Those who favor the System on a Programmable Chip (SOPC) approach will in particular benefit from this book. Students in both Electrical Engineering and Computer Science can also benefit from this book and the real-life industry practice it provides.

This book constitutes the refereed proceedings of the 17th International Workshop on Cryptographic Hardware and Embedded Systems, CHES 2015, held in Saint Malo, France, in September 2015. The 34 full papers included in this volume were carefully reviewed and selected from 128 submissions. They are organized in the following topical sections: processing techniques in side-channel analysis; cryptographic hardware implementations; homomorphic encryption in hardware; side-channel attacks on public key cryptography; cipher design and cryptanalysis; true random number generators and entropy estimations; side-channel analysis and fault injection attacks; higher-order side-channel attacks; physically unclonable functions and hardware trojans; side-channel attacks in practice; and lattice-based implementations.

This textbook provides practicing scientists and engineers an advanced treatment of the Atmel AVR microcontroller. This book is intended as a follow-on to a previously published book, titled *Atmel AVR Microcontroller Primer: Programming and Interfacing*. Some of the content from this earlier text is retained for completeness. This book will emphasize advanced programming and interfacing skills. We focus on system level design consisting of several interacting microcontroller subsystems. The first chapter discusses the system design process. Our approach is to provide the skills to quickly get up to speed to operate the internationally popular Atmel AVR microcontroller line by developing systems level design skills. We use the Atmel ATmega164 as a representative sample of the AVR line. The knowledge you gain on this microcontroller can be easily translated to every other microcontroller in the AVR line. In succeeding chapters, we cover the main subsystems aboard the microcontroller, providing a short theory section followed by a description of the related microcontroller subsystem with accompanying software for the subsystem. We then provide advanced examples exercising some of the features discussed. In all examples, we use the C programming language. The code provided can be readily adapted to the wide variety of compilers available for the Atmel AVR microcontroller line. We also include a chapter describing how to interface the microcontroller to a wide variety of input and output devices. The book concludes with several detailed system level design examples employing the Atmel AVR microcontroller. This book is a printed edition of the Special Issue "QoS in Wireless Sensor/Actuator Networks and Systems" that was published in JSAN

This book constitutes the proceedings of the 13th International Workshop on Cryptographic Hardware and Embedded Systems, CHES 2011, held in Nara, Japan, from September 28 until October 1, 2011. The 32 papers presented together with 1 invited talk were carefully reviewed and selected from 119 submissions. The papers are organized in topical sections named: FPGA implementation; AES; elliptic curve cryptosystems; lattices; side channel attacks; fault attacks; lightweight symmetric algorithms, PUFs; public-key cryptosystems; and hash functions.

This book is about the Arduino microcontroller and the Arduino concept. The visionary Arduino team of Massimo Banzi, David Cuartielles, Tom Igoe, Gianluca Martino, and David Mellis launched a new innovation in microcontroller hardware in 2005, the concept of open source hardware. Their approach was to openly share details of microcontroller-based hardware design platforms to stimulate the sharing of ideas and promote innovation. This concept has been popular in the software world for many years. This book is intended for a wide variety of audiences including students of the fine arts, middle and senior high school students, engineering design students, and practicing scientists and engineers. To meet this wide audience, the book has been divided into sections to satisfy the need of each reader. The book contains many software and hardware examples to assist the reader in developing a wide variety of systems. The book covers two different Arduino products: the Arduino UNO R3 equipped with the Atmel ATmega328 and the Arduino Mega 2560 equipped with the Atmel ATmega2560. The third edition has been updated with the latest on these two processing boards, changes to the Arduino Development Environment and multiple extended examples. This book constitutes the refereed proceedings of the 7th International Conference on the Theory and Application of Cryptographic Techniques in Africa, AFRICA CRYPT 2014, held in Marrakesh, Morocco in May 2014. The 26 papers presented together with 1 invited talk were carefully reviewed and selected from 83 submissions. The aim of Africa crypt 2014 is to provide an international forum for practitioners and researchers from industry, academia and government from all over the world for a wide ranging discussion of all forms of cryptography and its applications as follows: Public-Key Cryptography, Hash Functions, Secret-Key Cryptanalysis, Number Theory, Hardware Implementation, Protocols and Lattice-based Cryptography.

This book constitutes the refereed post-conference proceedings of the Third International Workshop on Lightweight Cryptography for Security and Privacy, LightSec 2014, held in Istanbul, Turkey, in September 2014. The 10 full papers presented were carefully reviewed and selected from 24 submissions. The papers are organized in the following topical sections: efficient implementations and designs; attacks; and protocols.

This book constitutes the refereed proceedings of the 11th International Workshop on Information Security Applications, WISA 2010, held in Jeju Island, Korea, in August 2010. The 25 revised full papers presented were carefully reviewed and selected from 107 submissions. The papers are organized in topical sections on cryptosystem, implementation, mobile security/secure coding, attack, biometrics, and secure protocol.

Wireless sensor networks (WSNs) are envisioned to enable a variety of applications including environmental monitoring, building and plant automation, homeland security and healthcare. It has been argued that one of the key characteristics of sensor networks is that they are tightly coupled with the applications running on top of them. Although WSNs have been an active area of research

for over a decade, real world sensor network deployments have not yet found their way to widespread adoption. The experience gained and lessons learned during the initial attempts to deploy WSNs and implement various sensor network applications are very valuable for the advancement of this technology. Recognizing the need of a conference dedicated to practical aspects of WSN pertaining to their employment in a plethora of applications, ICST launched SENSAPPEAL as a yearly event whose first edition took place in September 2009 at the Athens Information Technology campus in the outskirts of Athens, Greece.

This book constitutes the thoroughly refereed post-conference proceedings of the 9th International Conference on Heterogeneous Networking for Quality, Reliability, Security and Robustness, QShine 2013, which was held in National Capital Region (NCR) of India during January 2013. The 87 revised full papers were carefully selected from 169 submissions and present the recent technological developments in broadband high-speed networks, peer-to-peer networks, and wireless and mobile networks.

This book constitutes the refereed proceedings of the 12th International Conference on Cryptology in India, INDOCRYPT 2011, held in Chennai, India, in December 2011. The 22 revised full papers presented together with the abstracts of 3 invited talks and 3 tutorials were carefully reviewed and selected from 127 submissions. The papers are organized in topical sections on side-channel attacks, secret-key cryptography, hash functions, pairings, and protocols.

The Second Edition of the bestselling Measurement, Instrumentation, and Sensors Handbook brings together all aspects of the design and implementation of measurement, instrumentation, and sensors. Reflecting the current state of the art, it describes the use of instruments and techniques for performing practical measurements in engineering, physics, chemistry, and the life sciences and discusses processing systems, automatic data acquisition, reduction and analysis, operation characteristics, accuracy, errors, calibrations, and the incorporation of standards for control purposes. Organized according to measurement problem, the Spatial, Mechanical, Thermal, and Radiation Measurement volume of the Second Edition: Contains contributions from field experts, new chapters, and updates to all 96 existing chapters Covers instrumentation and measurement concepts, spatial and mechanical variables, displacement, acoustics, flow and spot velocity, radiation, wireless sensors and instrumentation, and control and human factors A concise and useful reference for engineers, scientists, academic faculty, students, designers, managers, and industry professionals involved in instrumentation and measurement research and development, Measurement, Instrumentation, and Sensors Handbook, Second Edition: Spatial, Mechanical, Thermal, and Radiation Measurement provides readers with a greater understanding of advanced applications.

This textbook describes in detail the fundamental information about the 8051 microcontroller and it carefully teaches readers how to use the microcontroller to make both electronics hardware and software. In addition to discussion of the 8051 internals, this text includes numerous, solved examples, end-of-chapter exercises, laboratory and practical projects.

This book constitutes the thoroughly refereed proceedings of the 11th International Conference on Security for Information Technology and Communications, SecITC 2018, held in Bucharest, Romania, in November 2018. The 35 revised full papers presented together with 3 invited talks were carefully reviewed and selected from 70 submissions. The papers present advances in the theory, design, implementation, analysis, verification, or evaluation of secure systems and algorithms.

Microcontroller education has experienced tremendous change in recent years. This book attempts to keep pace with the most recent technology while holding an opposing attitude to the No Need to Reinvent the Wheel philosophy. The choice strategies are in agreement with the employment of today's flexible and low-cost Do-It-Yourself (DIY) microcontroller hardware, along with an embedded C programming approach able to be adapted by different hardware and software development platforms. Modern embedded C compilers employ built-in features for keeping programs short and manageable and, hence, speeding up the development process. However, those features eliminate the reusability of the source code among diverse systems. The recommended programming approach relies on the motto Code More to Learn Even More, and directs the reader toward a low-level accessibility of the microcontroller device. The examples addressed herein are designed to meet the demands of Electrical & Electronic Engineering discipline, where the microcontroller learning processes definitely bear the major responsibility. The programming strategies are in line with the two virtues of C programming language, that is, the adaptability of the source code and the low-level accessibility of the hardware system.

The RSA Conference is the largest regularly-staged computer security event, with over 350 vendors and many thousands of attendees. The Cryptographers' Track (CT-RSA) is a research conference within the RSA Conference. CT-RSA began in 2001, and has become one of the major established venues for presenting cryptographic research papers to a wide variety of audiences. CT-RSA 2008 was held in San Francisco, California from April 8 to April 11. The proceedings of CT-RSA 2008 contain 26 papers selected from 95 submissions pertaining to all aspects of cryptography. Each submission was reviewed by at least three reviewers, which was made possible by the hard work of 27 Program Committee members and many external reviewers listed on the following pages. The papers were selected following a detailed online discussion among the Program Committee members. The program included an invited talk by Shai Goldwasser. The current proceedings include a short abstract of her talk. I would like to express my deep gratitude to the Program Committee members, who volunteered their expertise and hard work over several months, as well as to the external reviewers. Special thanks to Shai Halevi for providing and maintaining the Web review system used for paper submission, reviewing, and final-version preparation. Finally, I would like to thank Burt Kaliski and Ari Juels of RSA Laboratories, as well as the RSA conference team, especially Bree LaBollita, for their assistance throughout the process.

This book constitutes the thoroughly refereed post-conference proceedings of the 10th IFIP WG 8.8/11.2 International Conference on Smart Card Research and Advanced Applications, CARDIS 2011, held in Leuven, Belgium, in September 2011. The 20 revised full papers presented were carefully reviewed and selected from 45 submissions. The papers are organized in topical sections on smart cards system security, invasive attacks, new algorithms and protocols, implementations and hardware security, non-invasive attacks, and Java card security.

McKinsey Global Institute predicts Internet of Things (IoT) could generate up to \$11.1 trillion a year in economic value by 2025. Gartner Research Company expects 20 billion inter-connected devices by 2020 and, as per Gartner, the IoT will have a significant impact on the economy by transforming many enterprises into digital businesses and facilitating new business models, improving efficiency and increasing employee and customer engagement. It's clear from above and our research that the IoT is a game changer and will have huge positive impact in foreseeable future. In order to harvest the benefits of IoT revolution, the traditional software development paradigms must be fully upgraded. The mission of our book, is to prepare current and future software engineering teams with the skills and tools to fully utilize IoT capabilities. The book introduces essential IoT concepts from the perspectives of full-scale software development with the emphasis on creating niche blue ocean products. It also: Outlines a

fundamental full stack architecture for IoT Describes various development technologies in each IoT layer Explains IoT solution development from Product management perspective Extensively covers security and applicable threat models as part of IoT stack The book provides details of several IoT reference architectures with emphasis on data integration, edge analytics, cluster architectures and closed loop responses.

Nanomagnetic and spintronic computing devices are strong contenders for future replacements of CMOS. This is an important and rapidly evolving area with the semiconductor industry investing significantly in the study of nanomagnetic phenomena and in developing strategies to pinpoint and regulate nanomagnetic reliably with a high degree of energy efficiency. This timely book explores the recent and on-going research into nanomagnetic-based technology. Key features: Detailed background material and comprehensive descriptions of the current state-of-the-art research on each topic. Focuses on direct applications to devices that have potential to replace CMOS devices for computing applications such as memory, logic and higher order information processing. Discusses spin-based devices where the spin degree of freedom of charge carriers are exploited for device operation and ultimately information processing. Describes magnet switching methodologies to minimize energy dissipation. Comprehensive bibliographies included for each chapter enabling readers to conduct further research in this field. Written by internationally recognized experts, this book provides an overview of a rapidly burgeoning field for electronic device engineers, field-based applied physicists, material scientists and nanotechnologists. Furthermore, its clear and concise form equips readers with the basic understanding required to comprehend the present stage of development and to be able to contribute to future development. Nanomagnetic and Spintronic Devices for Energy-Efficient Memory and Computing is also an indispensable resource for students and researchers interested in computer hardware, device physics and circuits design.

This Research Topic is dedicated to Raja Parasuraman who unexpectedly passed on March 22nd 2015. Raja Parasuraman's pioneering work led the emergence of Neuroergonomics as a new scientific field. He combined his research interests in the field of Neuroergonomics which he defined as the study of the human brain in relation to performance at work and everyday settings. Raja Parasuraman was a pioneer, a truly exceptional researcher and an extraordinary person. He made significant contributions to a number of disciplines, from human factors to cognitive neuroscience. His advice to young researchers was to be passionate in order to develop theory and knowledge that can guide the design of technologies and environments for people. His legacy, the field of Neuroergonomics, will live on in countless faculties and students whom he advised and inspired with unmatched humility throughout the whole of his distinguished career. Raja Parasuraman was an impressive human being, a very kind person, and an absolutely inspiring individual who will be remembered by everyone who had the chance to meet him. About this Research Topic Since the advent of neuroergonomics, significant progress has been made with respect to methodology and tools for the investigation of the brain and behavior at work. This is especially the case for neuroscientific methods where the availability of ambulatory hardware, wearable sensors and advanced data analyses allow for imaging of brain dynamics in humans in applied environments. Methods such as: electroencephalography (EEG), functional near-infrared spectroscopy (fNIRS), and stimulation approaches like transcranial direct-current stimulation (tDCS) have made significant progress in both recording and altering brain activity while allowing full body movements outside laboratory environments. For neuroergonomics, the application of brain imaging in real-world scenarios is highly relevant. Traditionally, brain imaging experiments in human factors research tend to avoid active behavior for fear of artifacts and a contaminated data set that would provide limited insight into brain dynamics in real working environments. To overcome these problems new analyses approaches have to be developed that identify artifacts resulting from hostile recording environments and movement-related non-brain activity stemming from eye-, head, and full-body movements. The application of methodology from the field of Brain-Computer Interfacing (BCI) for neuroergonomics is one approach that has significant potential to enhance ambulatory monitoring and applied testing. Passive BCIs allow for assessing aspects of the user state online, such that systems can automatically adapt to their user. This neuroadaptive technology could lead to highly efficient working environments, to auto-adaptive experimental paradigms and to a continuous tracking of cognitive and affective aspects of the user state. Hence, deployment of portable neuroimaging technologies to real time settings could help assess cognitive and motivational states of personnel assigned to perform critical tasks. This Research Topic gathers submissions that cover new approaches in neuroergonomics. Different article type cover advanced neuroscience methods and neuroergonomics techniques as well as analysis approaches to investigate brain dynamics in working environments. The selection of papers provides insights into new neuroergonomic research approaches that demonstrate significant advances in brain imaging technologies that become more and more mobile. Moreover, a strong trend for new analyses approaches and paradigms investigating real work settings can be seen. Together, this unique collection of latest research papers provides a comprehensive overview on the latest developments in neuroergonomics.

This book constitutes the proceedings of the 17th International Workshop on Fast Software Encryption, held in Seoul, Korea, in February 2010.

This book combines elementary theory from computer science with real-world challenges in global geodetic observation, based on examples from the Geodetic Observatory Wettzell, Germany. It starts with a step-by-step introduction to developing stable and safe scientific software to run successful software projects. The use of software toolboxes is another essential aspect that leads to the application of generative programming. An example is a generative network middleware that simplifies communication. One of the book's main focuses is on explaining a potential strategy involving autonomous production cells for space geodetic techniques. The complete software design of a satellite laser ranging system is taken as an example. Such automated systems are then combined for global interaction using secure communication tunnels for remote access. The network of radio telescopes is used as a reference. Combined observatories form coordinated multi-agent systems and offer solutions for operational aspects of the Global Geodetic Observing System (GGOS) with regard to "Industry 4.0".

The two-volume set, LNCS 10492 and LNCS 10493 constitutes the refereed proceedings of the 22nd European Symposium on Research in Computer Security, ESORICS 2017, held in Oslo, Norway, in September 2017. The 54 revised full papers presented were carefully reviewed and selected from 338 submissions. The papers address issues such as data protection; security protocols; systems; web and network security; privacy; threat modeling and detection; information flow; and security in emerging applications such as cryptocurrencies, the Internet of Things and automotive.

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