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HEAVEN DULCE

10th International Conference, CSEDU 2018, Funchal, Madeira, Portugal, March 15–17, 2018, Revised Selected Papers IGI Global
Civil Aircraft Electrical Power System Safety Assessment: Issues and Practices provides guidelines and methods for conducting a safety assessment process on civil airborne systems and equipment. As civil aircraft electrical systems become more complicated, electrical wiring failures have become a huge concern in industry and government—especially on aging platforms. There have been several accidents (most recently battery problems on the Boeing 777) with some of these having a relationship to wiring and power generation. Featuring a case study on the continuous safety assessment process of the civil airborne electrical power system, this book addresses problems, issues and troubleshooting techniques such as single event effects (SEE), the failure effects of electrical wiring interconnection systems (EWIS), formal theories and safety analysis methods in civil aircrafts. Introduces how to conduct assignment of development assurance levels for the electrical power system Includes safety assessments of aging platforms and their respective Electrical Wiring Interconnection System (EWIS) Features material on failure mechanisms for wiring systems and discussion of Failure Modes and Effects Analysis (FMEA) sustainment
Second World Congress, Eindhoven, The Netherlands, November 2-6, 2009, Proceedings MIT Press
A perennial bestseller, the Digital Avionics Handbook offers a comprehensive view of avionics. Complete with case studies of avionics architectures as well as examples of modern systems flying on current military and civil aircraft, this Third Edition includes: Ten brand-new chapters covering new topics and emerging trends Significant restructuring to deliver a more coherent and cohesive story Updates to all existing chapters to reflect the latest software and technologies Featuring discussions of new data bus and display concepts involving retina scanning, speech interaction, and synthetic vision, the Digital Avionics Handbook, Third Edition provides practicing and aspiring electrical, aerospace, avionics, and control systems engineers with a pragmatic look at the present state of the art of avionics.
Civil Aircraft Electrical Power System Safety Assessment Butterworth-Heinemann
Model-driven Development for Embedded Software: Application to Communications for Drone Swarm describes the principles of model-oriented design used in the aeronautical field, specifically

for the UAV (Unmanned Aerial Vehicle). The book focuses on designing an embedded system for drones to carry out ad hoc communication within a drone fleet. In this context, an original methodology for rapid prototyping of embedded systems is presented. This approach saves time for the verification and formal validation phases, contributing to certification of the Unmanned Aerial System (UAS). The book also addresses the more traditional verification phases that must be performed to verify accuracy of the system. This evaluation is carried out in simulation and by real experimentation. The various tools necessary for the implementation of this methodology are described to allow the reader to be able to implement independently. Finally, to illustrate the contribution of this original methodology, an example of embedded system development is presented in which the different phases of the methodology are explained to conceive, validate and test a new secure routing protocol developed for communications within a fleet of drones. Describes the principles of model-oriented design used in the aeronautical field Presents an original methodology of rapid prototyping of embedded systems Presents a mode of development for embedded systems in the different phases

Handbook of Research on Emerging Advancements and Technologies in Software Engineering Springer Science & Business Media

Users increasingly demand more from their software than ever before□more features, fewer errors, faster runtimes. To deliver the best quality products possible, software engineers are constantly in the process of employing novel tools in developing the latest software applications. Progressions and Innovations in Model-Driven Software Engineering investigates the most recent and relevant research on model-driven engineering. Within its pages, researchers and professionals in the field of software development, as well as academics and students of computer science, will find an up-to-date discussion of scientific literature on the topic, identifying opportunities and advantages, and complexities and challenges, inherent in the future of software engineering.

Design and Development for Embedded Applications University-Press.org

Developing Safety-Critical SoftwareA Practical Guide for Aviation Software and DO-178C ComplianceCRC Press

Innovative Technologies for Dependable OTS-Based Critical Systems Springer

The amount of software used in safety-critical systems is increasing at a rapid rate. At the same time, software technology is changing, projects are pressed to develop software faster and more cheaply, and the software is being used in more critical ways. Developing Safety-Critical Software: A Practical Guide for Aviation Software and DO-178C Compliance equips you with the information you need to effectively and efficiently develop safety-critical, life-critical, and mission-critical software for aviation. The principles also apply to software for automotive, medical, nuclear, and other safety-critical domains. An international authority on safety-critical software, the author helped write DO-178C and the U.S. Federal Aviation Administration’s policy and guidance on safety-critical software. In this book, she draws on more than 20 years of experience as a certification authority, an avionics manufacturer, an aircraft integrator, and a software developer to present best practices, real-world examples, and concrete recommendations. The book includes: An overview of how software fits into the systems and safety processes Detailed examination of DO-178C and how to effectively apply the guidance Insight into the DO-178C-related documents on tool qualification (DO-330), model-based development (DO-331), object-oriented technology (DO-332), and formal methods (DO-333) Practical tips for the successful development of safety-critical software and certification Insightful coverage of some of the more challenging topics in safety-critical software development and verification, including real-time operating systems, partitioning, configuration data, software reuse, previously developed software, reverse engineering, and outsourcing and offshoring An invaluable reference for systems and software managers, developers, and quality assurance personnel, this book provides a wealth of information to help you develop, manage, and approve safety-critical software more confidently.

Model-driven Development for Embedded Software Springer

A graduate-level textbook that presents a unified mathematical framework for modeling and analyzing cyber-physical systems, with a strong focus on verification. Verification aims to establish whether a system meets a set of requirements. For such cyber-physical systems as driverless cars, autonomous spacecraft, and air-traffic management systems, verification is key to building safe systems with high levels of assurance. This graduate-level textbook presents a unified mathematical framework for modeling and analyzing cyber-physical systems, with a strong focus on verification. It distills the ideas and algorithms that have emerged from more than three decades of research and have led to the creation of industrial-scale modeling and verification techniques for cyber-physical systems. The book discusses such computer science concepts as undecidability and abstractions, alongside concepts from control theory including multiple Lyapunov functions and barrier certificates, all within a unified mathematical language. It explains algorithms for reachability analysis, counter-example guided abstraction refinement, and data-driven verification, as well as the key data structures that enable their effective implementation. Other topics include invariants, deductive verification, progress analysis, sensitivity analysis, simulation relations, fairness, model checking, satisfiability modulo theories, temporal logics, compositional reasoning, convergence analysis, asynchronous processes, and verification of black-box systems.The book provides more than twenty examples of cyber-physical verification, ranging from conceptual models to advanced driving-assist systems. Each chapter offers exercise problems; supporting materials, including slides, simulation code, additional exercises, and solutions are available on the book's website.

9th International Symposium, NFM 2017, Moffett Field, CA, USA, May 16-18, 2017, Proceedings DEStech Publications, Inc

The design, implementation and validation of avionics and aeronautical systems have become extremely complex tasks due to the increase of functionalities that are deployed in current avionics systems and the need to be able certify them before putting them into production. This book proposes a methodology to enable the rapid prototyping of such a system by considering from the start the certification aspects of the solution produced. This method takes advantage of the model-based design approaches as well as the use of formal methods for the validation of these systems. Furthermore, the use of automatic software code generation tools using models makes it possible to reduce the development phase as well as the final solution testing. This book presents, firstly, an overview of the model-based design approaches such as those used in the field of aeronautical software engineering. Secondly, an original methodology that is perfectly adapted to the field of aeronautical embedded systems is introduced. Finally, the authors illustrate the use of this method using a case study for the design, implementation and testing of a new generation aeronautical router.

24th IFIP WG 6.1 International Conference, ICTSS 2012,

Aalborg, Denmark, November 19-21, 2012, Proceedings CRC Press
Aircraft System Safety: Assessments for Initial Airworthiness Certification presents a practical guide for the novice safety practitioner in the more specific area of assessing aircraft system failures to show compliance to regulations such as FAR25.1302 and 1309. A case study and safety strategy beginning in chapter two shows the reader how to bring safety assessment together in a logical and efficient manner. Written to supplement (not replace) the content of the advisory material to these regulations (e.g. AMC25.1309) as well as the main supporting reference standards (e.g. SAE ARP 4761, RTCA/DO-178, RTCA/DO-154), this book strives to amalgamate all these different documents into a consolidated strategy with simple process maps to aid in their understanding and optimise their efficient use. Covers the effect of design, manufacturing, and maintenance errors and the effects of common component errors Evaluates the malfunctioning of multiple aircraft components and the interaction which various aircraft systems have on the ability of the aircraft to continue safe flight and landing Presents and defines a case study (an aircraft modification program) and a safety strategy in the second chapter, after which each of the following chapters will explore the theory of the technique required and then apply the theory to the case study

Mission-Critical and Safety-Critical Systems Handbook Springer Science & Business Media
"This document addresses the questions of both the industry and regulatory authorities. It contains frequently asked questions (FAQs), discussion papers (DPs) and rationale. Many of the FAQs and DPs are based on the previous version of this document, DO-248B; however, some have been modified to address the changes from DO-178B to DO-178C and to make it applicable to DO-278A. Additionally, some new FAQs and DPs have been added to provide additional clarification on DO-178C and/or DO-278A. The errata against DO-178B (which were in section 2 of DO-248B) have been incorporated into DO-178C. Rationale for DO-178C and DO-278A objectives have also been included in DO-248C."--RTCA Web site.

Knowledge Science, Engineering and Management Springer
This book constitutes the refereed proceedings of the 7th International Conference on Knowledge Science, Engineering and Management, KSEM 2014, held in Sibiu, Romania, in October 2014. The 30 revised full papers presented together with 5 short papers and 3 keynotes were carefully selected and reviewed from 77 submissions. The papers are organized in topical sections on formal semantics; content and document analysis; concept and lexical analysis; clustering and classification; metamodeling and conceptual modeling; enterprise knowledge; knowledge discovery and retrieval; formal knowledge processing; ontology engineering and management; knowledge management; and hybrid knowledge systems.

Rapid Prototyping Software for Avionics Systems Springer Nature
The demand for large-scale dependable, systems, such as Air Traffic Management, industrial plants and space systems, is attracting efforts of many word-leading European companies and SMEs in the area, and is expected to increase in the near future. The adoption of Off-The-Shelf (OTS) items plays a key role in such a scenario. OTS items allow mastering complexity and reducing costs and time-to-market; however, achieving these goals by ensuring dependability requirements at the same time is challenging. CRITICAL STEP project establishes a strategic collaboration between academic and industrial partners, and proposes a framework to support the development of dependable, OTS-based, critical systems. The book introduces methods and tools adopted by the critical systems industry, and surveys key achievements of the CRITICAL STEP project along four directions: fault injection tools, V&V of critical systems, runtime monitoring and evaluation techniques, and security assessment.

Progressions and Innovations in Model-Driven Software Engineering Springer Science & Business Media
This book constitutes the refereed proceedings of the 24th IFIP WG 6.1 International Conference on Testing Software and Systems, ICTSS 2012, held in Aalborg, Denmark, in November 2012. The 16 revised full papers presented together with 2 invited talks were carefully selected from 48 submissions. The papers are organized in topical sections on testing in practice, test frameworks for distributed systems, testing of embedded systems, test optimization, and new testing methods.

A Practical Guide for Aviation Software and DO-178C Compliance Woodhead Publishing
This book presents the thoroughly refereed post-conference proceedings of the International Conference on Formal Verification of Object-Oriented Software, FoVeOOS 2011, held in Turin, Italy, in October 2011 – organised by COST Action IC0701. The 10 revised full papers presented together with 5 invited talks were carefully reviewed and selected from 19 submissions. Formal software verification has outgrown the area of academic case studies, and industry is showing serious interest. The logical next goal is the verification of industrial software products. Most programming languages used in industrial practice are object-oriented, e.g. Java, C++, or C#. FoVeOOS 2011 aimed to foster collaboration and interactions among researchers in this area.

2014 International Conference on Computer, Network CRC Press
This volume presents a collection of peer-reviewed, scientific articles from the 15th International Conference on Information Technology – New Generations, held at Las Vegas. The collection addresses critical areas of Machine Learning, Networking and Wireless Communications, Cybersecurity, Data Mining, Software Engineering, High Performance Computing Architectures, Computer Vision, Health, Bioinformatics, and Education.

A Complete Guide to DO-178 (software), DO-178C (update), DO-254 (hardware) John Wiley & Sons
This handbook provides a consolidated, comprehensive information resource for engineers working with mission and safety critical systems. Principles, regulations, and processes common to all critical design projects are introduced in the opening chapters. Expert contributors then offer development models, process templates, and documentation guidelines from their own core critical applications fields: medical, aerospace, and military. Readers will gain in-depth knowledge of how to avoid common pitfalls and meet even the strictest certification standards. Particular emphasis is placed on best practices, design tradeoffs, and testing procedures. *Comprehensive coverage of all key concerns for designers of critical systems including standards compliance, verification and validation, and design tradeoffs *Real-world case studies contained within these pages provide insight from experience

John Wiley & Sons
This book constitutes the thoroughly refereed proceedings of the 9th International Conference on Computer Supported Education, CSEDU 2018, held in Funchal, Madeira, Portugal, in March 2018. The 27 revised full papers were carefully reviewed and selected from 193 submissions. The papers deal with the following topics: new educational environments, best practices and case studies of innovative technology-based learning strategies, institutional policies on computer-supported education including open and distance education.

Software Requirements Springer

The first three CEAS (Counsil of European Aerospace Societies) Specialist Conferences on Guidance, Navigation and Control (CEAS EuroGNC) were held in Munich, Germany in 2011, in Delft, Netherlands in 2013 and in Toulouse, France in 2017. The Warsaw University of Technology (WUT) and the Rzeszow University of Technology (RzUT) accepted the challenge of jointly organizing the 4th edition. The conference aims to promote scientific and technical excellence in the fields of Guidance, Navigation and Control (GNC) in aerospace and other fields of technology. The Conference joins together the industry with the academia research. This book covers four main topics: Guidance and Control, Control Theory Application, Navigation, UAV Control and Dynamic. The papers included focus on the most advanced and actual topics in guidance, navigation and control research areas: · Control theory, analysis, and design · ; Novel navigation, estimation, and tracking methods · Aircraft, spacecraft, missile and UAV guidance, navigation, and control · Flight testing and experimental results · Intelligent control in aerospace applications · Aerospace robotics and unmanned/autonomous systems · Sensor systems for guidance, navigation and control · Guidance, navigation, and control concepts in air traffic control systems For the 4th CEAS Specialist Conference on Guidance, Navigation and Control the International Technical Committee established a formal review process. Each paper was reviewed in compliance with good journal practices by independent and anonymous reviewers. At the end of the review process papers were selected for publication in this book.

Application to Communications for Drone Swarm Springer

The book provides background information about technical solutions, processes and methodology to develop future automated mobility solutions. Beginning from the legal requirements as the minimum tolerable risk level of the society, the book provides state-of-the-art risk-management methodologies. The system engineering approach based on todays engineering best practices enhanced by principles derived from cybernetics. The approach derived from the typical behaviour of a human driver in public road traffic to a cybernetical based system engineering approach. Beyond the system engineering approach, a common behaviour model for the operational domain will show aspects how to extend the system engineering model with principles of cybernetics. The role and the human factors of road traffic participants and drivers of motor vehicles are identified and several viewpoints for different observers show how such mixed traffic scenarios could be assessed and optimised. The influence of the changing mobility demands of the society and the resulting changes to the origination of producer, owner, driver and supplier show aspects for future liability and risk share option for new supply chains. Examples from various industries provide some well-proven engineering principles how to adapt those for the future mobility for the benefit of the users. The aim of the book is to raise awareness that the safety provided by a product, a means of transport or a system up to an entire traffic system depends on the capabilities of the various actors. In addition to the driver and passengers, there are also other road users, maintenance personnel and service providers, who must have certain abilities to act safely in traffic. These are also the capabilities of the organisation, not only the organisation that develops or brings the product to market, but also the organisation that is responsible for the operation and the whole lifecycle of the products. The book is for people who want to get involved in the mobility of the future. People, that have ideas to become a player who want to help shape the future mobility of society and who want to bring responsible solutions for users into the market.

16th Ada-Europe International Conference on Reliable Software Technologies, Edinburgh, UK, June 20-24, 2011. Proceedings Springer

Written as a workbook with a set of guided exercises that teach by example, this book gives a practical, hands-on guide to using UML to design and implement embedded and real-time systems. A review of the basics of UML and the Harmony process for embedded software development: two on-going case examples to teach the concepts, a small-scale traffic light control system and a large scale unmanned air vehicle show the applications of UML to the specification, analysis and design of embedded and real-time systems in general. A building block approach: a series of progressive worked exercises with step-by-step explanations of the complete solution, clearly demonstrating how to convert concepts into actual designs. A walk through of the phases of an incremental spiral process: posing the problems and the solutions for requirements analysis, object analysis, architectural design, mechanistic design, and detailed design.