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ADELAIDE NOVAK

Mechanical Railway Signalling Springer-Verlag
This book constitutes the refereed proceedings of the 26th Brazilian Symposium on Formal Methods, SBMF 2023, held in Manaus, Brazil, during December 4-8, 2023. The 7 full papers and 2 short papers presented in this book were carefully reviewed and selected from 16 submissions. The papers are divided into the following topical sections: specification and modeling languages; testing; and verification and validation.
Railway Signalling and Communications Springer
The focus of this volume is comprised of the fundamentals, models, and information technologies (IT) methods and tools for disaster prediction and mitigation. A more detailed list of topics includes mathematical and computational modeling of processes leading to or producing disasters, modeling of disaster effects, IT means for disaster mitigation, including data mining tools, knowledge-based and expert systems for use in disaster circumstances, GIS-based systems for disaster prevention and mitigation and equipment for disaster-prone areas. A specific type or class of disasters (natural or human-made), however will not be part of the main focus of this work. Instead, this book was conceived to offer a comprehensive, integrative view on disasters, seeking to determine what various disasters have in common. Because disaster resilience and mitigation involve humans, societies and cultures, not only technologies and economic models, special attention was paid in this volume to gain a comprehensive view on these issues, as a foundation of the IT tool design.
Railway Signalling Springer Nature
Simulation methods are widely-used in the field of railway planning and operations. However, the various tools are all lacking with respect to the standards they utilise as well as their published interfaces. For an end-user, the basic mechanism and the assumptions built into a simulation tool are unknown, which means that the true potential of these software tools is limited. One of the most critical issues is the lack of the ability of users to define a sophisticated workflow, integrated in several rounds of simulation with adjustable parameters and settings. This book develops and describes a user-based, customisable platform. As the preconditions of the platform, the design aspects for modelling the components of a railway system and building the workflow of railway simulation are elaborated in detail. Based on the model and the workflow, an integrated simulation platform with open interfaces is developed. Users and researchers gain the ability to rapidly develop their own algorithms, supported by the tailored simulation process in a flexible manner. The productivity of using simulation tools for further evaluation and optimisation will be significantly improved

through the user-adaptable open interfaces.

Improving Disaster Resilience and Mitigation - IT Means and Tools Springer

Railways are frequently promoted as one of the most sustainable modes of transport. However, their impact will in practice be significantly affected by the ways in which they are designed, constructed, and used. This book provides a comprehensive overview of the issues involved in planning, engineering and operating sustainable railway systems.

Railway Signalling & Interlocking IGI Global

Human errors, as well as deliberate sabotage, pose a considerable danger to passengers riding on the modern railways and have created disastrous consequences. To protect civilians against both intentional and unintentional threats, rail transportation has become increasingly automated. Railway Safety, Reliability, and Security: Technologies and Systems Engineering provides engineering students and professionals with a collection of state-of-the-art methodological and technological notions to support the development and certification of real-time safety-critical railway control systems, as well as the protection of rail transportation infrastructures.

Railway Signalling & Interlocking Springer Nature

This book shows how the systems approach is employed by scientists in various countries to solve specific problems concerning railway transport. In particular, the book describes the experiences of scientists from Romania, Germany, the Czech Republic, the UK, Russia, Ukraine, Lithuania and Poland. For many of these countries there is a problem with the historical differences between the railways. In particular, there are railways with different rail gauges, with different signaling and communication systems, with different energy supplies and, finally, with different political systems, which are reflected in the different approaches to the management of railway economies. The book's content is divided into two main parts, the first of which provides a systematic analysis of individual means of providing and maintaining rail transport. In turn, the second part addresses infrastructure and management development, with particular attention to security issues. Though primarily written for professionals involved in various problems concerning railway transport, the book will also benefit manufacturers, railway technical staff, managers, and students with transport specialties, as well as a wide range of readers interested in learning more about the current state of transport in different countries.

NASA Formal Methods Springer

Dieses Lehrbuch vermittelt sehr verständlich und anschaulich mit vielen Abbildungen das aktuelle Basiswissen der Eisenbahnbetriebslehre in Verbindung mit den betrieblichen Funktionalitäten der Leit- und Sicherungstechnik. Es beschreibt prozessorientiert die maßgebenden Systemeigenschaften des Schienenverkehrs. In der aktuellen Auflage wurden alle Kapitel zur Anpassung an den Stand der Technik aktualisiert. Praktische Zusatzinformationen zum Buch, wie beispielsweise ein Online-Glossar in

Deutsch und Englisch, finden sich auf der Homepage des Autors.
XIV International Scientific Conference "INTERAGROMASH 2021" Springer
Safety Theory and Technology of High-Speed Train Operation puts forward solutions for train dispatching and signal control. Frequent railway incidents have threatened the safety of rail transport. In 2013, more than 12 trains collided. In the same year, a Spanish train derailed due to speed, and two of China's high-speed trains collided. In 2016, Germany and Italy both experienced serious train collisions. Global railway security is essential. Many accidents are caused by train dispatching errors and signal system failure. Chinese high-speed railway has developed very quickly and at a very large scale. However, many issues reagrding safety has not been addressed. This book considers the issue from the perspective of a system. A train operation control system structure is put forward in order to ensure safety. Five key technologies (namely system-level fail-safe, parallel monitoring, completeness of train control data, data sharing and fusion and prevention of common errors in monitoring), are proposed. In order to prevent collision, over-speed, derailment, and rear-end collision accidents, the concept and corresponding parallel monitoring technology of five core control items (train route, speed, tracking interval, temporary speed limit, train running state) is proposed. Puts forward solutions for train dispatching and signal control Views high-speed train safety and technology from a systems-theory perspective Describes five key technologies to ensure safety Proposes five parallel monitoring technologies to prevent collision, over-speed, derailment and rear-end collision incidents Considers the very quick and large-scale development of Chinese high-speed rail
Software Engineering and Formal Methods Springer-Verlag
ETCS.
Neues verkehrswissenschaftliches Journal - Ausgabe 26 WIT Press
This book constitutes the refereed proceedings of the 15th International Conference on Software Engineering and Formal Methods, SEFM 2017, held in Trento, Italy, in September 2017. The 17 full papers and 6 short papers presented were carefully reviewed and selected from 102 submissions. The papers deal with a large range of topics in the following research areas: new frontiers in software architecture; software verification and testing; software development methods; application and technology transfer; security and safety; and design principles.
Sustainable Railway Engineering and Operations Springer
This book contains original and fundamental research papers in the following areas: engineering technologies for precision agriculture, agricultural systems management and digitalization in agriculture, logistics in agriculture, and other topics. Selected materials of the largest regional scientific event—INTERAGROMASH 2021 conference–included in this book present the results of the latest research in the areas of precision agriculture and agricultural machinery industry. The book is

aimed for professionals and practitioners, for researchers, scholars, and producers. The materials presented here are used in the educational process at specific agricultural universities or during vocational training at enterprises and become an indispensable helper to farm managers in making the best agronomic decisions. The book is also useful for representatives of regional authorities, as it gives an idea of existing high-tech solutions for agriculture.

Colour Light Signalling for Model Railways Somnath Banerjee

Originating from presentations at the 17th International Conference on Railway Engineering Design and Operation, this volume contains selected research works on the topic. It is important to continue to update the use of advanced systems by promoting general awareness throughout the management, design, manufacture and operation of railways and other emerging passenger, freight and transit systems. The included papers help to facilitate this goal and place a key focus on the applications of computer systems in advanced railway engineering. These research studies will be of interest to all those involved in the development of railways, including managers, consultants, railway engineers, designers of advanced train control systems and computer specialists.

Formal Methods: Foundations and Applications Springer

This book constitutes the proceedings of the 14th International Conference on Integration of Artificial Intelligence and Operations Research Techniques in Constraint Programming for Combinatorial Optimization Problems, CPAIOR 2017, held in Padua, Italy, in June 2017. The 32 full papers presented together with 6 abstracts were carefully reviewed and selected from numerous submissions. The conference brings together interested researchers from constraint programming, artificial intelligence, and operations research to present new techniques or applications in the intersection of these fields and provides an opportunity for researchers in one area to learn about techniques in the others, and to show how the integration of techniques from different fields can lead to interesting results on large and complex problems.

Railway Signalling & Interlocking Springer Nature

The two-volume set LNCS 9952 and LNCS 9953 constitutes the refereed proceedings of the 7th International Symposium on Leveraging Applications of Formal Methods, Verification and Validation, ISoLA 2016, held in Imperial, Corfu, Greece, in October 2016. The papers presented in this volume were carefully reviewed and selected for inclusion in the proceedings. Featuring a track introduction to each section, the papers are organized in topical sections named: statistical model checking; evaluation and reproducibility of program analysis and verification; ModSyn-PP: modular synthesis of programs and processes; semantic heterogeneity in the formal development of complex systems; static and runtime verification: competitors or friends?; rigorous engineering of collective adaptive systems; correctness-by-construction and post-hoc verification: friends or

foes?; privacy and security issues in information systems; towards a unified view of modeling and programming; formal methods and safety certification: challenges in the railways domain; RVE: runtime verification and enforcement, the (industrial) application perspective; variability modeling for scalable software evolution; detecting and understanding software doping; learning systems: machine-learning in software products and learning-based analysis of software systems; testing the internet of things; doctoral symposium; industrial track; RERS challenge; and STRESS.

Integration, Decentralization and Self-Organization Springer

This book constitutes the proceedings of the 9th International Symposium on NASA Formal Methods, NFM 2017, held in Moffett Field, CA, USA, in May 2017. The 23 full and 8 short papers presented in this volume were carefully reviewed and selected from 77 submissions. The papers focus on formal techniques and other approaches for software assurance, their theory, current capabilities and limitations, as well as their potential application to aerospace, robotics, and other NASA-relevant safety-critical systems during all stages of the software life-cycle.

Formal Techniques for Safety-Critical Systems Academic Press

In dem Handbuch werden die technischen und operativen Grundlagen und Zusammenhänge der Eisenbahninfrastruktur sowie der Interaktion von Infrastruktur und Fahrzeug knapp, aber anhand vieler Fakten und Details dargestellt. Durch die zahlreichen Bilder, Zeichnungen, Diagramme und Tabellen können sich Leser schnell einen Überblick über die einzelnen Wissensgebiete verschaffen. Der Band wendet sich an praktisch tätige und planende Ingenieure, an technisch interessierte Führungskräfte sowie an Mitarbeiter in wissenschaftlichen Einrichtungen und Behörden.

Complex Systems Design & Management Notion Press, Incorporated

The Handbook of RAMS in Railway Systems: Theory and Practice addresses the complexity in today's railway systems, which use computers and electromechanical components to increase efficiency while ensuring a high level of safety. RAM (Reliability, Availability, Maintainability) addresses the specifications and standards that manufacturers and operators have to meet. Modeling, implementation, and assessment of RAM and safety requires the integration of railway engineering systems; mathematical and statistical methods; standards compliance; and financial/economic factors. This Handbook brings together a group of experts to present RAM and safety in a modern, comprehensive manner.

TRANSBALTICA XII: Transportation Science and Technology Emerald Group Publishing

This book constitutes the refereed proceedings of the Third International Workshop on Formal Techniques for Safety-Critical Systems, FTSCS 2014, held in Luxembourg, in November 2014. The 14 revised full papers presented together with two invited talks were carefully reviewed and selected from 40 submissions. The papers address various topics related to the application of formal and semi-formal methods to improve the quality of

safety-critical computer systems.

Railway Safety, Reliability, and Security: Technologies and Systems Engineering BoD – Books on Demand

Despite modern appearances, colour light signalling has been around since the 1920s and is just as full of subtle details and variations as 'traditional' semaphore signalling. The inclusion of a working signalling system within a model railway layout is technically challenging but adds realism and 'wow' factor. This new book contains a brief history of the development and deployment of colour light signalling in the UK; a basic explanation of how track design influences signalling design; an overview of the different types of point motor and, finally, descriptions of the different components that make up a signalling system and how these components are used and controlled. It is an extensive guide to developing and adding realistic colour light signalling to a model railway layout.

Handbook of RAMS in Railway Systems

Springer

Public transport brings undisputed benefits to modern-day societies. Aside from providing an affordable means to get around, its supreme efficiency in comparison with private transport plays a crucial role in curbing congestion and pollution, highlighting the importance of adequate design and operation of public transport systems. The first part of this thesis seeks to improve the planning process of public transport operators by integrating planning steps that are traditionally performed sequentially. The first study considers a combination of line planning and vehicle scheduling, and presents methods that estimate how many vehicles are required to operate a line plan, without having to compute a timetable. The second study combines timetabling and vehicle scheduling, and develops a novel optimization model for jointly optimizing a periodic timetable and vehicle circulation schedule. The second part of this thesis investigates decentralized strategies for operating public transport, with a focus on railway systems. Such strategies could be preferable over conventional centralized and schedule-based control in various scenarios. The first study in this part presents a theoretical analysis of a simple, decentralized strategy for dispatching vehicles. The second study considers the application of decentralized control to out-of-control situations in railways, which includes the development of a solution algorithm to find line plans that are suited for these circumstances. The final study in this thesis tests decentralized dispatching of both vehicles and crew in a microscopic railway simulation.