Rail Automation Solutions For Mainline And Regional Railways

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Reliability, Safety, and Security of Railway Systems. Modelling, Analysis, Verification, and Certification
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Automation in Mining, Mineral and Metal Processing
Rail International
Engineering Digest
Computational Intelligence
Assessment of the Applicability of Cooperative Vehicle-highway Automation Systems (CVHAS) to Bus Transit and Intermodal Freight
Bulletin of the Public Affairs Information Service
Logging & Sawmilling Journal
Electrical & Electronics Abstracts
Security and Quality in Cyber-Physical Systems Engineering
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Urban Transportation Abstracts
Railway Research
Consultants and Consulting Organizations Directory
The Brown Boveri Review
Rail Infrastructure Resilience

Electric Traction - Motive Power and Energy Supply
Jane's World Railways
Railway Age
Foundations of Generic Optimization
International Railway Journal
Railway Signaling and Communications
Public Affairs Information Service Bulletin

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The Railway Magazine
Verso Books
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Ninth Residential Course on Railway Signalling and Control Systems Springer Nature
This thesis takes a pedagogical stance in demonstrating how results from theoretical computer science may be applied to yield significant insight into the behaviour of the devices computer systems engineering practice seeks to put in place, and that this is immediately attainable with the present state of the art. The focus for this detailed study is provided

by the type of solid state signalling systems currently being deployed throughout mainline British railways. Safety and system reliability concerns dominate in this domain. With such motivation, two issues are tackled: the special problem of software quality assurance in these data-driven control systems, and the broader problem of design dependability. In the former case, the analysis is directed towards proving safety properties of the geographic data which encode the control logic for the railway interlocking; the latter examines the fidelity of the communication protocols upon which the distributed control system depends. The starting point for both avenues of attack is a mathematical model of the interlocking logic that is derived by interpreting the geographic data in process algebra. Thus, the emphasis is on the semantics of the programming language in question, and the kinds of safety properties which can be expressed as invariants of the system's ongoing behaviour. Although the model so derived turns out to be too concrete to be effectual in program verification in general, a careful analysis of the safety proof reveals a simple co-induction argument that leads to a highly efficient proof methodology. From this understanding it is straightforward to mechanise the safety arguments, and a prototype verification system is realised in

higher-order logic which uses the proof tactics of the theorem prover to achieve full automation. The other line of inquiry considers whether the integrity of the overall design that coordinates the activities of many concurrent control elements can be compromised. Therefore, the formal model is developed to specifically answer safety-related concerns about the protocol employed to achieve distributed control in the management of larger railway networks. The exercise reveals that moderately serious design flaws do exist, but the real value of the mathematical model is twofold: it makes explicit one's assumptions about the conditions under which the faults can and cannot be activated, and it provides a framework in which to prove a simple modification to the design recovers complete security at negligible cost to performance.

Railway and Shipping World Routledge

Provides an integrated introduction to artificial intelligence. Develops AI representation schemes and describes their uses for diverse applications, from autonomous robots to diagnostic assistants to infobots. DLC: Artificial intelligence.

Intelligent transport systems development Springer Nature

This book conveys mechanical fundamentals of electric railway propulsion, which includes rail-bound guidance, transmission of traction effort from wheel to rail under the influence of

non-constant levels of adhesion and the transmission of motor torque to a spring-mounted and thus sliding drive set.

The Routledge Handbook of Public Transport IGI Global

A railway is a complex distributed engineering system: the construction of a new railway or the modernisation of a existing one requires a deep understanding of the constitutive components and their interaction, inside the system itself and towards the outside world. The former covers the various subsystems (featuring a complex mix of high power sources, sensitive safety critical systems, intentional transmitters, etc.) and their interaction, including the specific functions and their relevance to safety. The latter represents all the additional possible external victims and sources of electromagnetic interaction. EMC thus starts from a comprehension of the emissions and immunity characteristics and the interactions between sources and victims, with a strong relationship to electromagnetics and to system modeling. On the other hand, the said functions are achieved and preserved and their relevance for safety is adequately handled, if the related requirements are well posed and managed throughout the process from the beginning. The link is represented by standards and their correct application, as a support to analysis, testing and demonstration.

Networked Control Systems for Connected and Automated Vehicles Woodhead Publishing
This volume is based on the Ninth Residential Course on Railway Signalling and Control Systems.

Research Anthology on BIM and Digital Twins in Smart Cities Springer Science & Business Media
This book focuses on selected research problems of contemporary railways. The first chapter is devoted to the prediction of railways development in the nearest future. The second chapter discusses safety and security problems in general, precisely from the system point of view. In the third chapter, both the general approach and a particular case study of a critical incident with regard to railway safety are presented. In the fourth chapter, the question of railway infrastructure studies is presented, which is devoted to track superstructure. In the fifth chapter, the modern system for the technical condition monitoring of railway tracks is discussed. The compact on-board sensing device is presented. The last chapter focuses on modeling railway vehicle dynamics using numerical simulation, where the dynamical models are exploited.

Safety Assurance in Interlocking Design Litres
Control of large-scale distributed energy systems over communication networks is an important topic with many application domains. The book

presents novel concepts of distributed control for networked and cyber-physical systems (CPS), such as smart industrial production lines, smart energy grids, and autonomous vehicular systems. It focuses on new solutions in managing data and connectivity to support connected and automated vehicles (CAV). The book compiles original research papers presented at the conference “Networked Control Systems for Connected and Automated Vehicles” (Russia). The latest connected and automated vehicle technologies for next generation autonomous vehicles are presented. The book sets new goals for the standardization of the scientific results obtained and the advancement to the level of full autonomy and full self-driving (FSD). The book presents the latest research in artificial intelligence, assessing virtual environments, deep learning systems, and sensor fusion for automated vehicles. Particular attention is paid to new safety standards, safety and security systems, and control of epidemic spreading over networks. The issues of building modern transport infrastructure facilities are also discussed in the articles presented in this book. The book is of considerable interest to scientists, researchers, and graduate students in the field of transport systems, as well as for managers and employees of companies using or producing equipment for these systems.

Energy Research

Abstracts Inst of Engineering & Technology Theory and Technology for Improving High-Speed Railway Transportation Capacity present solutions to problems in utilizing new technologies for signaling in high-speed rail towards increasing capacity. The book examines capacity in terms of signaling control and for a railway transport organization. Key problems covered include station intervals and resource occupation. This book provides a handbook for developing capacity through new technology and methods in signaling. Sections focus on improving high-speed railway transportation capacity using frontier railway technologies and include the experience of the authors on high-speed railways in China to present best practices and novel solutions to railway signaling control and transportation organization. This title includes insights gained from years of work at the State Key Laboratory of Rail Traffic Control and Safety, offering readers a theoretical and systematic summary of the technology that can improve high-speed railway capacity. Focuses on improving high-speed railway transportation capacity at the frontier of railway technologies Examines capacity in terms of signaling control and railway transport organization Gives detailed descriptions of the state-of the-art in high-speed railway signaling, safety and traffic control systems Leverages research and expertise in high-speed

railways from their rapid development and rollout across China Provides solutions to using new technologies in order to move beyond traditional approaches to railway signaling

Transdex Index Oldenbourg Industrieverlag

An index to translations issued by the United States Joint Publications Research Service (JPRS).

RSC. Railway System Controls Springer Nature

This book constitutes the refereed proceedings of the 4th International Conference on Reliability, Safety, and Security of Railway Systems, RSSRail 2022, held in Paris, France, in June 2022. The 16 full papers presented in this book were carefully reviewed and selected from numerous submissions. They cover a range of topics including railways system and infrastructure advance modelling; scheduling and track planning; safety process and validation; modelling; formal verification; and security.

Theory and Technology for Improving High-Speed Railway Transportation Capacity BoD – Books on Demand

Economic growth, security and sustainability across Europe are at risk due to ageing railway infrastructure systems. At present, the majority of such systems are aging and some have even reached their initial design lives. These issues align with a major challenge in civil engineering: how to restore and improve urban infrastructure and built environments. Policy,

environmental and physical barriers must be addressed and overcome. The complex and interconnected nature of the problem means that there is a need for academia, industry, communities and governments to work collaboratively. The challenges posed by extreme events from natural and man-made disasters are urgent. Rail Infrastructure Resilience: A Best-Practices Handbook presents developed improvement methods for rail infrastructure systems, toward resilience to extreme conditions. It shows how best to use new information in the engineering design, maintenance, construction and renewal of rail infrastructure resilience, through knowledge exchange and capability development. The book presents the outcome of a major European research project, known as the RISEN project. RISEN aimed to enhance knowledge creation and transfer using both international and intersectoral secondment mechanisms among European Advanced Rail Research Universities and SMEs, and Non-EU, leading rail universities, providing methodological approaches and practical tools for restoring and improving railway infrastructure systems for extreme events. Edited and written by members of this project, this book will be essential reading for researchers and practitioners hoping to find practical solutions to the challenges of rail

infrastructure resilience. Offers a best-practices handbook for rail infrastructure resilience from the leaders in the field Paints a holistic picture of the rail transport system, showing that infrastructure maintenance intervention can be enhanced through advanced monitoring systems and resilience design Presents rail infrastructure resilience and advanced condition monitoring, allowing a better understanding of the critical maintenance, renewal and retrofit needs of railways Considers how academia, industry, communities and governments can work collaboratively in order to tackle aggregated problems in rail infrastructure resilience Presents the findings from the RISEN project, the leading European project on enhancing knowledge creation and transfer of expertise on rail infrastructure resilience

Electromagnetic Compatibility in Railways CRC Press

This is a comprehensive overview of the basics of fuzzy control, which also brings together some recent research results in soft computing, in particular fuzzy logic using genetic algorithms and neural networks. This book offers researchers not only a solid background but also a snapshot of the current state of the art in this field.

Railway Directory Elsevier

Railway Transportation Systems covers the entire range of railway passenger systems, from conventional and high-

speed intercity systems to suburban, regional, operating on steep gradients, and urban ones. It also examines in depth freight railway systems transporting conventional loads, heavy loads, and dangerous goods. For each system, the text provides a definition; an overview of its evolution and examples of good practice; the main design, construction, and operational characteristics; and the preconditions for its selection. Additionally, it offers a general overview of safety, interfaces with the environment, forces acting on the track, and techniques that govern the stability and guidance of railway vehicles. This new edition brings two new chapters. One concerns pre-feasibility studies of urban rail projects, and the other analyses the operation of railway systems under specific weather conditions and natural phenomena. New material examines dilemmas, trends and innovations in rail freight transportation; a new definition for high-speed rail; a number of case studies; and an update of cutting-edge technologies. It is ideal for graduate students, engineers, consultants, manufacturers, and transport company executives who need a reference and guide.

JPRS Report Oxford University Press on Demand

This book examines the requirements, risks, and solutions to improve the security and quality of complex cyber-physical systems (C-CPS), such as

production systems, power plants, and airplanes, in order to ascertain whether it is possible to protect engineering organizations against cyber threats and to ensure engineering project quality. The book consists of three parts that logically build upon each other. Part I "Product Engineering of Complex Cyber-Physical Systems" discusses the structure and behavior of engineering organizations producing complex cyber-physical systems, providing insights into processes and engineering activities, and highlighting the requirements and border conditions for secure and high-quality engineering. Part II "Engineering Quality Improvement" addresses quality improvements with a focus on engineering data generation, exchange, aggregation, and use within an engineering organization, and the need for proper data modeling and engineering-result validation. Lastly, Part III "Engineering Security Improvement" considers security aspects concerning C-CPS engineering, including engineering organizations' security assessments and engineering data management, security concepts and technologies that may be leveraged to mitigate the manipulation of engineering data, as well as design and run-time aspects of secure complex cyber-physical systems. The book is intended for several target groups: it enables

computer scientists to identify research issues related to the development of new methods, architectures, and technologies for improving quality and security in multi-disciplinary engineering, pushing forward the current state of the art. It also allows researchers involved in the engineering of C-CPS to gain a better understanding of the challenges and requirements of multi-disciplinary engineering that will guide them in their future research and development activities. Lastly, it offers practicing engineers and managers with engineering backgrounds insights into the benefits and limitations of applicable methods, architectures, and technologies for selected use cases. Reliability, Safety, and Security of Railway Systems. Modelling, Analysis, Verification, and Certification Springer Science & Business Media A different kind of politics for a new kind of society--beyond work, scarcity and capitalism In the twenty-first century, new technologies should liberate us from work. Automation, rather than undermining an economy built on full employment, is instead the path to a world of liberty, luxury and happiness—for everyone. Technological advance will reduce the value of commodities—food, healthcare and housing—towards zero. Improvements in renewable energies will make fossil fuels a thing of the past. Asteroids will

be mined for essential minerals. Genetic editing and synthetic biology will prolong life, virtually eliminate disease and provide meat without animals. New horizons beckon. In Fully Automated Luxury Communism, Aaron Bastani conjures a vision of extraordinary hope, showing how we move to energy abundance, feed a world of 9 billion, overcome work, transcend the limits of biology, and establish meaningful freedom for everyone. Rather than a final destination, such a society merely heralds the real beginning of history.

Railway Transportation Systems

The Routledge Handbook of Public Transport is a reference work of chapters providing in-depth examination of the current issues and future developments facing public transport. Chapters in this book are dedicated to specific key topics, identifying the challenges therein and pointing to emerging areas of research and concern. The content is written by an international group of expert contributors and is enhanced through contributions from practitioners to deliver a broader perspective. The Handbook deals with public transport policy context, modal settings, public transport environment, public transport delivery issues, smart card data for planning and the future of public transport. This comprehensive reference work will be a vital source for academics, researchers and transport practitioners in public

transport management, transport policy and transport planning.

Germany's Top 500

In recent years, smart cities have been an emerging area of interest across the world. Due to this, numerous technologies and tools, such as building information modeling (BIM) and digital twins, have been developed to help achieve smart cities. To ensure research is continuously up to date and new technologies are considered within the field, further study is required. The Research Anthology on BIM and Digital Twins in Smart Cities considers the uses, challenges, and opportunities of BIM and digital twins within smart cities. Covering key topics such as data, design, urban areas, technology, and sustainability, this major reference work is ideal for industry professionals, government officials, computer scientists, policymakers, researchers, scholars, practitioners, instructors, and students.

Automation in Mining, Mineral and Metal Processing

Rail International