Automatic Train Control In Rail Rapid Transit

This title incorporates the 15th proceedings of the very successful International Conference on Railway Engineering Design and Operation (COMPRAIL) series, which began in Frankfurt 1987 and continued in Rome (1990); Washington (1992); Madrid (1994); Berlin (1996); Lisbon (1998); Bologna (2000); Lemnos (2002); Dresden (2004); Prague (2006); Toledo (2008); Beijing (2010); the New Forest, home of the Wessex Institute (2012) and, again in Rome in 2014. The papers presented at this conference aim to update the use of advanced systems, promoting their general awareness throughout the management, design, manufacture and operation of railways and other emerging passenger, freight and transit systems. With the conference attracting a variety of specialists, including railway engineers, designers of advanced train control systems and computer specialists, the book particularly emphasises the use of computer systems in advanced railway engineering. Topics include but are not restricted to: Advanced train control Operations quality; Risk management; Planning and policy; Energy supply and consumption; Communications and signalling; Operational planning; Interface management; Systems integration; Maglev; High speed technology; Interoperability; Passenger flow management; Computer simulations and Driverless and automatic train operation.

This book updates the use of computer-based techniques, promoting their general awareness throughout the business management, design, manufacture and operation of railways and other advanced passenger, freight and transit systems. Including papers from the Tenth International Conference on Computer System Design and Operation in the Railway and Other Transit Systems, the book will be of interest to railway management, consultants, railway engineers (including signal and control engineers), designers of advanced train control systems and computer specialists. Themes of interest include: Planning; Human Factors; Computer Techniques, Management and languages; Decision Support Systems; Systems Engineering; Electromagnetic Compatibility and Lightning; Reliability, Availability, Maintainability and Safety (RAMS); Freight; Advanced Train Control; Train Location; CCTV/Communications; Operations Quality; Timetables; Traffic Control; Global Navigation using Satellite Systems; Online Scheduling and Dispatching; Dynamics and Wheel/Rail Interface; Power Supply; Traction and Maglev; Obstacle Detection and Collision Analysis; Railway Security.

This book contains the 14th proceedings of the, very successful, International conference on Railway Engineering Design and Optimization (COMPRAIL 2014), which began in 1987. Encouraging the update and use of advanced systems, the book promotes their general awareness throughout the business management, design, manufacture and operation of railways and other emerging passenger, freight and transit systems. It particularly emphasises the use of computer systems in advanced railway engineering. Topics covered include: Timetable planning; Computer techniques and simulations; Actual train control; Operations quality; Risk management; Planning; Monitoring and maintenance; Energy supply and consumption; Communications and signalling; Rescheduling; Safety and security; Railway vehicle dynamics; Driverless and automatic train operation.

Long description: Millions of people use public transport every day. Without efficient rail transport systems, the world's metropolises would face a traffic infarction every day. However, in many places the existing infrastructure is reaching the limits of its capacity. The key to increasing the efficiency of urban rail transport systems lies in automation. In recent decades, more and more cities around the world have invested in high-performance rail transport systems. For a long time, Germany has not reinvested in metro and light rail systems. The technological basis in cities is therefore often outdated and in some places has already exceeded the limits of its technical life. In some cities, transport companies will therefore renew

their infrastructure over the next few years. In Germany, too, comprehensive investments in the renewal of the signalling infrastructure of metro and light rail systems are to be expected. This ABSTRACT represents the valid normative basis for highly automated light rail systems. The presentation in this ABSTRACT is based on the author's experience in advising transport companies and his practical work in the acceptance assessment of train protection systems for international metros and light rail vehicles.What you can take from this ABSTRACT:- Definitions of automatic train control systems (CBTC)- Basic safety functions of automatic train control systems- Definition of the degree of automation of automatic train control systems- Operating modes and mode transitions of automatic train control systems- Performance criteria of automatic train control systems

The Rail Technical Strategy is a long-term vision of the railway as a system, which identifies the challenges that will have to be met over the next 30 years, which should be read alongside the 2007 White Paper 'Delivering a Sustainable Railway'. It starts by looking at the needs and requirements, including the strategic drivers and future traffic types, before examining the characteristics of a future railway system. Amongst the key themes is the need for a more precisely engineered system that can be run to maximum capacity and improve environmental performance. The final section looks at the ways the strategy can be implemented.

Advanced train control systems (ATCS) play an important role in improving the efficiency and safety of train operation, acting as their 'brains and nerves'. This volume gathers selected papers from Comprail, which is the most successful series of conferences in the areas of railways and other transit systems.

This book contributes to making urban rail transport fast, punctual and energy-efficient –significant factors in the importance of public transportation systems to economic, environmental and social requirements at both municipal and national levels. It proposes new methods for shortening passenger travel times and for reducing energy consumption, addressing two major topics: (1) train trajectory planning: the authors derive a nonlinear model for the operation of trains and present several approaches for calculating optimal and energy-efficient trajectories within a given schedule; and (2) train scheduling: the authors develop a train scheduling model for urban rail systems and optimization approaches with which to balance total passenger travel time with energy efficiency and other costs to the operator. Mixed-integer linear programming and pseudospectral methods are among the new methods proposed for single- and multi-train systems for the solution of the nonlinear trajectory planning problem which involves constraints such as varying speed restrictions and maximum traction/braking force. Signaling systems and their effects are also accounted for in the trajectory planning model. Origin–destination passenger demand is included in the model formulation for train scheduling. Iterative convex programming and efficient bi-level approaches are utilized in the solution of the train-scheduling problem. In addition, the splitting rates and route choices of passengers are also optimized from the system point of view. The problems and solutions described in Optimal Trajectory Planning and Train Scheduling for

Urban Rail Transit Systems will interest researchers studying public transport systems and logistics whether from an academic or practitioner background as well as providing a real application for anybody studying optimization theory and predictive control.

This volume features the proceedings of the Eleventh International Conference on Computer System Design and Operation in the Railway and other Transit Systems. It provides the latest information on the use of computer-based techniques, and promotes a general awareness of these throughout the business management, design, manufacture and operation of railways and other advanced passenger, freight and transit systems. Of interest to railway managers, consultants, railway engineers (including signal and control engineers), designers of advanced train systems and computer specialists, the proceedings will also be of interest to planners of railway network systems, manufacturers of the track, rolling stock, locomotives and other ancillary equipment and systems; who all have a common interest in the development and application of computer techniques for the solution of problems in the railway and other mass transit systems. Papers included in this volume cover the following topics: Planning; Safety and security; Passenger interface systems; Decision support systems, Computer techniques; Driverless operations; Advanced train control; Train location; Dynamic train regulations; Timetable planning; Operations quality; Communications, Energy management; Power supply; Dynamics and wheel/rail interface; Freight; Condition monitoring; Asset management; Maglev and high speed railway.

Please note that the content of this book primarily consists of articles available from Wikipedia or other free sources online. Pages: 86. Chapters: Railway signal, Positive train control, Cab signalling, Token, Track circuit, Wigwag, Railway semaphore signal, Pulse code cab signaling, Automatic Warning System, Centralized traffic control, Signal passed at danger, Signalling control, Signalman, Direct traffic control, Interlocking, SelTrac, Automatic Block Signal, Application of railway signals, Train order operation, Signalling block system, European Rail Traffic Management System, Balise, Lever frame, Train protection system, Crewe North Junction signal box, Radio Electronic Token Block, Railway slide fence, Automatic train stop, Wrong-side failure, Double switching, Communication-based train control, Treadle, Single-line working, Track circuit interrupter, London Bridge Area Signalling Centre, Pass of Brander stone signals, Railway block code, Block post, Institution of Railway Signal Engineers, Dark territory, Overlap, Annett's key, Moving block, Double line automatic signalling, Slow zone, Permissive block regulations, Rail traffic controller, Crossing sequence.

Containing the proceedings of the Thirteenth International Conference on Design and Operation in Railway Engineering, this book presents the latest developments in the use of computer-based techniques in the design and operation of railways. The COMPRAIL conference series serves as the forum for major advances in this important field. The book covers such topics as Advanced Train Control; Planning; Timetable Planning; Rescheduling; Risk Management; Safety and Security; Maglev and High-speed Railways; Traffic Control and Safety of High-speed Railways; Metro and Other

Transit Systems; Communications and Signalling; Energy Supply and Consumption; Driverless and Automatic Train Operation; Operations Quality; Computer Techniques and Simulations; Railway Vehicle Dynamics; Dynamics and Wheel/Rail Interface; Monitoring and Maintenance; Crack, Damage and Fatigue Problems.The book will be of interest to railway managers, consultants, railway engineers (including signal and control engineers), designers of advanced train control systems and computer specialists

Railway systems are full of amazing scientific principles and elaborate plans. This book introduces the basic concepts of railways and their systems. And this book will answer most of your questions: ? How does a train overcome centrifugal force at a curve? ? How do vehicle bogies increase passenger's comfort? ? How does a hybrid vehicle use two energy sources? ? How do some trains go up mountains? ? How does a train transfer to another track?

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.

Please note that the content of this book primarily consists of articles available from Wikipedia or other free sources online. Pages: 53. Chapters: Linienzugbeeinflussung, Positive train control, Train horn, Transmission Voie-Machine, Emergency brake, European Train Control System, Automatic Train Control, Train Protection & Warning System, Advanced Civil Speed Enforcement System, Automatic Train Protection, KLUB-U, Train stop, Sistema Controllo Marcia Treno, Train protection system, LOCOPROL, Punktformige Zugbeeinflussung, Pilot, Defect detector, Interoperable Communications Based Signaling, Continuous Automatic Warning System, EBICAB, Communication-based train control, Controle de vitesse par balises, Automatische treinbeinvloeding, Blocco Automatico a Correnti Codificate, RS4 Codici, Le Crocodile, ALSN, ERTMS Regional, Integra-Signum, Chinese Train Control System, Thales Rail Signalling Solutions, LS 90, Train Automatic Stopping Controller.

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.
A new generation of automatic train control systems is currently under development in the commuter-rail transit industry. These systems will utilize radio communication between wayside control computers and trains in order to provide high precision train control beyond the capability of today's automatic systems. The Bay Area Rapid Transit (BART) system is developing such a modern control system in collaboration with Harmon Industries. This system, called the Advanced Automatic Train Control (AATC) system, will allow for precision train locating and control, and will facilitate coordination of the trajectories of multiple trains. This system will be capable of running trains more closely together and decreasing the time a train requires to traverse the system, while simultaneously operating with a more modest traction power infrastructure, and providing a smoother, more comfortable ride to commuters. The authors have collaborated with BART to develop a simulator of the AATC system and the traction power system, and they have utilized this simulator as a testbed for the development of advanced train control techniques. Several train control algorithms, including one employing a neural network for train voltage prediction, have been developed and tested in the simulator. Smoother train trajectories, reduced power infrastructure requirements, and reduced energy consumption have been demonstrated. Improved service reliability is also expected to result.
Investigates and quantifies the variables that affect the maximum passenger carrying capacity of rail transit in four categories-- rail rapid transit (heavy rail), light rail transit, commuter rail, and automated guideway transit (AGT)--in North America.