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   Titolo   Big Data Analytics for Time-Critical Mobility Forecasting [[electronic resource]] : From Raw Data to Trajectory-Oriented Mobility Analytics in the Aviation and Maritime Domains / / edited by George A. Vouros, Gennady Andrienko, Christos Doulkeridis, Nikolaos Pelekis, Alexander Artikis, Anne-Laure Jousselme, Cyril Ray, Jose Manuel Cordero, David Scarlatti

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   Edizione   [1st ed. 2020.]

   Descrizione fisica   1 online resource (378 pages)

   Disciplina   385.0724

   Soggetti   Database management
                        Mathematical statistics
                        Transportation engineering
                        Traffic engineering
                        Database Management
                        Probability and Statistics in Computer Science
                        Transportation Technology and Traffic Engineering

   Lingua di pubblicazione   Inglese

   Formato   Materiale a stampa

   Livello bibliografico   Monografia

   Nota di contenuto   Part I: Time Critical Mobility Operations and Data: A Perspective from the Maritime and Aviation Domains -- Mobility Data: A Perspective from the Maritime Domain -- The Perspective on Mobility Data from the Aviation Domain -- Part II: Visual Analytics and Trajectory Detection and Summarization: Exploring Data and Constructing Trajectories -- Visual Analytics in the Aviation and Maritime Domains -- Trajectory Detection and Summarization over Surveillance Data Streams -- Part III: Trajectory Oriented Data Management for Mobility Analytics -- Modeling Mobility Data and Constructing Large Knowledge Graphs to Support Analytics: The datAcron Ontology -- Integrating Data by Discovering Topological and Proximity Relations Among Spatiotemporal Entities -- Distributed Storage of Large Knowledge Graphs with Mobility

Data -- Part IV: Analytics Towards Time Critical Mobility Forecasting -- Future Location and Trajectory Prediction -- Event Processing for Maritime Situational Awareness -- Offline Trajectory Analytics -- Part V Big Data Architectures for Time Critical Mobility Forecasting -- The Big Data Architecture for Mobility Analytics -- Part VI: Ethical Issues for Time Critical Mobility Analytics -- Ethical Issues in Big Data Analytics for Time Critical Mobility Forecasting.

Sommario/riassunto	This book provides detailed descriptions of big data solutions for activity detection and forecasting of very large numbers of moving entities spread across large geographical areas. It presents state-of-the-art methods for processing, managing, detecting and predicting trajectories and important events related to moving entities, together with advanced visual analytics methods, over multiple heterogeneous, voluminous, fluctuating and noisy data streams from moving entities, correlating them with data from archived data sources expressing e.g. entities' characteristics, geographical information, mobility patterns, mobility regulations and intentional data. The book is divided into six parts: Part I discusses the motivation and background of mobility forecasting supported by trajectory-oriented analytics, and includes specific problems and challenges in the aviation (air-traffic management) and the maritime domains. Part II focuses on big data quality assessment and processing, and presents novel technologies suitable for mobility analytics components. Next, Part III describes solutions toward processing and managing big spatio-temporal data, particularly enriching data streams and integrating streamed and archival data to provide coherent views of mobility, and storing of integrated mobility data in large distributed knowledge graphs for efficient query-answering. Part IV focuses on mobility analytics methods exploiting (online) processed, synopsized and enriched data streams as well as (offline) integrated, archived mobility data, and highlights future location and trajectory prediction methods, distinguishing between short-term and more challenging long-term predictions. Part V examines how methods addressing data management, data processing and mobility analytics are integrated in big data architectures with distinctive characteristics compared to other known big data paradigmatic architectures. Lastly, Part VI covers important ethical issues that research on mobility analytics should address. Providing novel approaches and methodologies related to mobility detection and forecasting needs based on big data exploration, processing, storage, and analysis, this book will appeal to computer scientists and stakeholders in various application domains.