

1. Record Nr.	UNISA996550557203316
Autore	Darema Frederica
Titolo	Handbook of Dynamic Data Driven Applications Systems [[electronic resource]] : Volume 2 // edited by Frederica Darema, Erik P. Blasch, Sai Ravela, Alex J. Aved
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2023
ISBN	3-031-27986-7
Edizione	[1st ed. 2023.]
Descrizione fisica	1 online resource (937 pages)
Altri autori (Persone)	BlaschErik P RavelaSai AvedAlex J
Disciplina	003.3
Soggetti	Computer simulation Big data Computers, Special purpose Dynamics Nonlinear theories Dynamical systems Quantitative research Computer Modelling Big Data Special Purpose and Application-Based Systems Applied Dynamical Systems Dynamical Systems Data Analysis and Big Data
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	The Dynamic Data Driven Applications Systems (DDDAS) Paradigm and Emerging Directions -- Dynamic Data Driven Applications Systems and Information-Inference Couplings -- Polynomial Chaos Expansion Based Nonlinear Filtering for Dynamic State Estimation -- Measure-Invariant Symbolic Systems for Pattern Recognition and Anomaly Detection -- Equation-Free Computations as DDDAS Protocols for Bifurcation

Studies: A Granular Chain Example -- A Stochastic Dynamic Data-Driven Framework for Real-time Prediction of Materials Damage in Composites -- Dynamic Data-Driven Monitoring of Nanoparticle Self Assembly Processes -- From Data to Decisions: A Real-Time Measurement -Inversion-Prediction-Steering Framework for Hazardous Events and Structural Health Monitoring -- Bayesian Computational Sensor Networks: Small-Scale Structural Health Monitoring -- A Dynamic Data Driven Sensor Tasking with Application of Aerospace Systems -- Dynamic Data-Driven Application Systems for Reservoir Simulation-Based Optimization: Lessons Learned and Future Trends -- DDDAS within the Oil and Gas Industry -- A Simulation-Based Online Dynamic Data-Driven Framework for Large-Scale Wind-turbine Farm Systems Operation -- Towards Dynamic Data Driven Systems for Rapid Adaptive Interdisciplinary Ocean Forecasting -- Towards Cyber-Eco Systems: Networked Sensing, Inference and Control for Ecological and Agricultural Systems -- An Energy-Aware Airborne Dynamic Data-Driven Application System for Persistent Sampling and Surveillance -- Using Dynamic Data Driven Cyberinfrastructure for Next Generation Wildland Fire Intelligence -- Autonomous Monitoring of Wildfires with Vision-Equipped UAS and Temperature Sensors via Evidential Reasoning -- Airborne Fire Detection and Modeling using Unmanned Aerial Vehicles Imagery: Datasets and Approaches -- DDDAS-based Remote Sensing -- Advances in Domain Adaptation for Aerial Imagery -- Retrospective Cost Parameter Estimation with Application to Space Weather Modeling -- A Dynamic Data Driven Approach to Space Situational Awareness -- Data driven cancer research with digital microscopy and Pathomics -- Robust Data Driven Region of Interest Segmentation for Breast Thermography -- Adaptive Data Stream Mining (DSM) Systems -- Deception Detection in Videos using Robust Facial Features with Attention Feedback -- Manufacturing the Future via Dynamic Data Driven Applications Systems (DDDAS) -- DDDAS in the Social Sciences -- Anomaly-Detection Defense against Test-Time Evasion Attacks on Robust DNNs -- Dynamic Data-Driven Approach for Cyber Resilient and Secure Critical Energy Systems -- Dynamic Network-centric Multi-cloud Platform for Real-Time and Data-Intensive Science Workflows -- INDICES: Applying DDDAS Principles for Performance Interferenceaware CloudtoFog Application Migration -- Adaptive Routing for Hybrid Photonic-Plasmonic (HyPPI) Interconnection Network for Manycore Processors using DDDAS on the Chip.

Sommario/riassunto

This Second Volume in the series Handbook of Dynamic Data Driven Applications Systems (DDDAS) expands the scope of the methods and the application areas presented in the first Volume and aims to provide additional and extended content of the increasing set of science and engineering advances for new capabilities enabled through DDDAS. The methods and examples of breakthroughs presented in the book series capture the DDDAS paradigm and its scientific and technological impact and benefits. The DDDAS paradigm and the ensuing DDDAS-based frameworks for systems' analysis and design have been shown to engender new and advanced capabilities for understanding, analysis, and management of engineered, natural, and societal systems ("applications systems"), and for the commensurate wide set of scientific and engineering fields and applications, as well as foundational areas. The DDDAS book series aims to be a reference source of many of the important research and development efforts conducted under the rubric of DDDAS through the examples and case studies presented, either within their own field or other fields of study. DDDAS has proven to be a transformative technology as data has

become the third part of the triad, with theory and computation as the other two parts. Initially DDDAS was part of control theory but as data have become ubiquitous there has been a paradigm shift, initiated by DDDAS, from simulation to effectively using data for prediction. John Cherniavsky, retired, as Division Director, NSF - US National Science Foundation The DDDAS paradigm integrates and enhances the deepest, most well-grounded foundations and tools - both from expert based methods and from learning-based methods, building well beyond more popular and limited forms of AI. This book provides a unique breadth and depth of scope across many science and technology fields, showing how DDDAS is an overarching concept that connects and unifies the wide diversity across these fields. Paul Werbos, retired, as Program Director, NSF - US National Science Foundation .
