1. Record Nr. UNINA9910484962803321

Titolo	Machine Learning and Data Mining in Aerospace Technology / / edited by Aboul Ella Hassanien, Ashraf Darwish, Hesham El-Askary
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2020
ISBN	3-030-20212-7
Edizione	[1st ed. 2020.]
Descrizione fisica	1 online resource (VIII, 232 p. 97 illus., 62 illus. in color.)
Collana	Studies in Computational Intelligence, , 1860-949X ; ; 836
Disciplina	006.31
Soggetti	Computational intelligence Aerospace engineering Astronautics Artificial intelligence Computational Intelligence Aerospace Technology and Astronautics Artificial Intelligence
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Tensor-based anomaly detection for satellite telemetry data -- Machine learning in satellites monitoring and risk challenges -- Formalization, prediction and recognition of expert evaluations of telemetric data of artificial satellites based on type-II fuzzy sets -- Intelligent health monitoring systems for space missions based on data mining techniques -- Design, implementation, and validation of satellite simulator and data packets analysis -- Crop yield estimation using decision trees and random forest machine learning algorithms on data from terra (EOS AM-1) & aqua (EOS PM-1) satellite data -- Data analytics using satellite remote sensing in healthcare applications -- Design, Implementation, and Testing of Unpacking System for Telemetry Data of Artificial Satellites: Case Study: EGYSAT1 -- Multiscale Satellite Image Classification using Deep Learning Approach -- Security approaches in machine learning for satellite communication -- Machine learning techniques for IoT intrusions detection in aerospace cyber physical systems.

Sommario/riassunto

This book explores the main concepts, algorithms, and techniques of Machine Learning and data mining for aerospace technology. Satellites are the ‘eagle eyes’ that allow us to view massive areas of the Earth simultaneously, and can gather more data, more quickly, than tools on the ground. Consequently, the development of intelligent health monitoring systems for artificial satellites – which can determine satellites’ current status and predict their failure based on telemetry data – is one of the most important current issues in aerospace engineering. This book is divided into three parts, the first of which discusses central problems in the health monitoring of artificial satellites, including tensor-based anomaly detection for satellite telemetry data and machine learning in satellite monitoring, as well as the design, implementation, and validation of satellite simulators. The second part addresses telemetry data analytics and mining problems, while the last part focuses on security issues in telemetry data.