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Disciplina	796.015
Soggetti	Sports sciences Artificial intelligence Machine learning Computer science Recreation - Equipment and supplies Sport Science Artificial Intelligence Machine Learning Sport Analytics Computer Science Sport Technology
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Nota di contenuto	I Basics -- AI and ML: Definitions and basics -- Supervised and Unsupervised Learning -- Model evaluation in machine learning applications -- Predictive Bayesian Modeling in Sport Science -- Computer Vision and Deep Learning for Sports Analytics -- Human and artificial intelligence integration for decision-making in sports performance -- Match predictions in soccer: Machine learning vs. Poisson approaches -- II Metrics in team sports -- Machine Learning in Soccer -- Machine Learning in Basketball -- Machine Learning in Handball -- Risk, Reward, and Reinforcement Learning in Ice Hockey Analytics -- III Metrics in individual sports -- Machine Learning for Contemporary Dance -- Automatic annotation of movements in dance -- Profiling of High-Performance Skateboarders from Anthro-fitness

Variables: A Random Forest-Based-Machine Learning Analysis -- IV Applications in sports science -- Defining player dominant region in soccer: background, data-driven models advances, and scientific challenges -- Applications of Computer Vision in Sports Sciences -- Machine learning-based analysis of multi-agent trajectories in basketball -- Artificial intelligence to promote physical activity -- Machine Learning for Injury Prediction -- Event Data Based Action Valuation: Possibilities and Limitations -- V Outlook -- Responsible use of Machine Learning in Sports Science -- Opportunities and challenges of artificial intelligence in sports science.

Sommario/riassunto

This professional book is one of the first book publications providing a comprehensive overview of how artificial intelligence (AI) and machine learning (ML) are used in the context of sports science research and sports practice. In addition to the basics of AI and ML, various applications are described, including self-learning algorithms for analyzing athletes' movement patterns and intelligent wearables that provide real-time data. By integrating big data, game results, fitness parameters and individual performance can be analyzed in detail, leading to new developments in research. There are many opportunities for future research activities, e.g. performance analysis to prevent injuries and personalized training methods. More than 25 experts help to cover a wide range of topics related to AI and ML and concisely summarize the latest state of research. Various topics are clustered in overarching book sections, including general basics, metrics in team sports, metrics in individual sports and applications in sports science. An outlook also addresses ethical issues concerning the use of AI and ML in sport and their responsible application. Overall, professionals and researchers in the fields of sports informatics, sports technology, exercise science and sports medicine are provided with a comprehensive reference work with practical examples of an innovative field of research. The Editor Prof Dr Daniel Memmert is the Executive Head and Professor at the Institute of Exercise Training and Sport Informatics at the German Sport University Cologne. He is the editor and author of numerous textbooks specializing in exercise training, sport psychology and computer science. His institute organizes two certificate courses (Match Analysis Team Cologne and Sport Director in Junior and Amateur Football) and the first international further education Master's course in "Match Analysis".