

1. Record Nr.	UNINA9910502972903321
Titolo	Deep Learning for Unmanned Systems // edited by Anis Koubaa, Ahmad Taher Azar
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2021
ISBN	3-030-77939-4
Edizione	[1st ed. 2021.]
Descrizione fisica	1 online resource (731 pages)
Collana	Studies in Computational Intelligence, , 1860-9503 ; ; 984
Disciplina	006.31
Soggetti	Control engineering Robotics Automation Computational intelligence Engineering - Data processing Control, Robotics, Automation Computational Intelligence Data Engineering
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Deep Learning for Unmanned Autonomous Vehicles: A Comprehensive Review -- Deep Learning and Reinforcement Learning for Autonomous Unmanned Aerial Systems: Roadmap for Theory to Deployment -- Reactive Obstacle Avoidance Method for a UAV -- Guaranteed Performances for Learning-Based Control Systems using Robust Control Theory -- A cascaded deep Neural Network for Position Estimation of Industrial Robots -- Managing Deep Learning Uncertainty for Autonomous Systems -- Uncertainty-Aware Autonomous Mobile Robot Navigation with Deep Reinforcement Learning -- Deep Reinforcement Learning for Autonomous Mobile Networks in Micro-Grids -- Reinforcement learning for Autonomous Morphing Control and Cooperative Operations of UAV Cluster -- Image-Based Identification of Animal Breeds Using Deep Learning.
Sommario/riassunto	This book is used at the graduate or advanced undergraduate level and many others. Manned and unmanned ground, aerial and marine

vehicles enable many promising and revolutionary civilian and military applications that will change our life in the near future. These applications include, but are not limited to, surveillance, search and rescue, environment monitoring, infrastructure monitoring, self-driving cars, contactless last-mile delivery vehicles, autonomous ships, precision agriculture and transmission line inspection to name just a few. These vehicles will benefit from advances of deep learning as a subfield of machine learning able to endow these vehicles with different capability such as perception, situation awareness, planning and intelligent control. Deep learning models also have the ability to generate actionable insights into the complex structures of large data sets. In recent years, deep learning research has received an increasing amount of attention from researchers in academia, government laboratories and industry. These research activities have borne some fruit in tackling some of the challenging problems of manned and unmanned ground, aerial and marine vehicles that are still open. Moreover, deep learning methods have been recently actively developed in other areas of machine learning, including reinforcement training and transfer/meta-learning, whereas standard, deep learning methods such as recent neural network (RNN) and coevolutionary neural networks (CNN). The book is primarily meant for researchers from academia and industry, who are working on in the research areas such as engineering, control engineering, robotics, mechatronics, biomedical engineering, mechanical engineering and computer science. The book chapters deal with the recent research problems in the areas of reinforcement learning-based control of UAVs and deep learning for unmanned aerial systems (UAS) The book chapters present various techniques of deep learning for robotic applications. The book chapters contain a good literature survey with a long list of references. The book chapters are well written with a good exposition of the research problem, methodology, block diagrams and mathematical techniques. The book chapters are lucidly illustrated with numerical examples and simulations. The book chapters discuss details of applications and future research areas.

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