

1. Record Nr.	UNINA9910629279003321
Titolo	Intelligent Autonomous Drones with Cognitive Deep Learning : Build AI-Enabled Land Drones with the Raspberry Pi 4 // by David Allen Blubaugh, Steven D. Harbour, Benjamin Sears, Michael J. Findler
Pubbl/distr/stampa	Berkeley, CA : , : Apress : , : Imprint : Apress, , 2022
ISBN	9781484268032 1484268032
Edizione	[1st ed. 2022.]
Descrizione fisica	1 online resource (519 pages)
Disciplina	629.892
Soggetti	Autonomous robots Drone aircraft Mobile robots - Automatic control Artificial intelligence Raspberry Pi (Computer)
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Chapter 1. Rover Platform Overview. -Chapter 2. AI Rover System Design and Analysis -- Chapter 3. Installing Linux and Development Tools -- Chapter 4. Building a Simple Virtual Rover -- Chapter 5. Adding Sensors to Our Simulation -- Chapter 6. Sense and Avoidance -- Chapter 7. Navigation, SLAM, and Goals -- Chapter 8. OpenCV and Perception -- Chapter 9. Reinforced Learning -- Chapter 10. Subsumption Cognitive Architecture -- Chapter 11. Geospatial Guidance for AI Rover -- Chapter 12. Noetic ROS Further Examined and Explained -- Chapter 13. Further Considerations -- Appendix A: Bayesian Deep Learning -- Appendix B: Open AI Gym -- Appendix: Introduction to the Future of AI-ML Research.
Sommario/riassunto	What is an artificial intelligence (AI)-enabled drone and what can it do? Are AI-enabled drones better than human-controlled drones? This book will answer these questions and more, and empower you to develop your own AI-enabled drone. You'll progress from a list of specifications and requirements, in small and iterative steps, which will then lead to the development of Unified Modeling Language (UML)

diagrams based in part to the standards established by for the Robotic Operating System (ROS). The ROS architecture has been used to develop land-based drones. This will serve as a reference model for the software architecture of unmanned systems. Using this approach you'll be able to develop a fully autonomous drone that incorporates object-oriented design and cognitive deep learning systems that adapts to multiple simulation environments. These multiple simulation environments will also allow you to further build public trust in the safety of artificial intelligence within drones and small UAS. Ultimately, you'll be able to build a complex system using the standards developed, and create other intelligent systems of similar complexity and capability. Intelligent Autonomous Drones with Cognitive Deep Learning uniquely addresses both deep learning and cognitive deep learning for developing near autonomous drones. You will: Examine the necessary specifications and requirements for AI enabled drones for near-real time and near fully autonomous drones Look at software and hardware requirements Understand unified modeling language (UML) and real-time UML for design Study deep learning neural networks for pattern recognition Review geo-spatial Information for the development of detailed mission planning within these hostile environments.
