1. Record Nr.   UNINA9910484724603321

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   Titolo   Multicopter design and control practice : / : a series experiments based on MATLAB and Pixhawk / / Quan Quan, Xunhua Dai, Shuai Wang

   Pubbl/distr/stampa   Singapore : , : Springer Singapore : , : Imprint : Springer, , 2020

   ISBN   981-15-3138-2

   Edizione   [1st edition 2020.]

   Descrizione fisica   1 online resource (xvi, 407 pages) : illustrations

   Disciplina   629.13339

   Soggetti   Control engineering
                        Robotics
                        Automation
                        Aerospace engineering
                        Astronautics
                        Drone aircraft - Control systems
                        Drone aircraft - Design
                        Control and Systems Theory
                        Robotics and Automation
                        Aerospace Technology and Astronautics

   Lingua di pubblicazione   Inglese

   Formato   Materiale a stampa

   Livello bibliografico   Monografia

   Nota di bibliografia   Includes bibliographical references.

   Nota di contenuto   Introduction -- Experimental Platform Configuration -- Experimental Platform Introduction -- Experimental Procedure -- Multicopter Propulsion System Design -- Multicoper Modeling -- Multicopter Sensor Calibration -- State Estimation and Filter Design -- Multicopter Attitude Controller Design -- Multicopter Set-point Controller Design -- Decision-making Controller Design for Semi-autonomous Multicopters -- Multicopter Failsafe Logic Design -- Appendix A -- Appendix B.

   Sommario/riassunto   As the sister book to "Introduction to Multicopter Design and Control," published by Springer in 2017, this book focuses on using a practical process to help readers to deepen their understanding of multicopter design and control. Novel tools with tutorials on multicopters are presented, which can help readers move from theory to practice.

Experiments presented in this book employ: (1) The most widely-used flight platform – multicopters – as a flight platform; (2) The most widely-used flight pilot hardware – Pixhawk – as a control platform; and (3) One of the most widely-used programming languages in the field of controlengi-neering – MATLAB + Simulink – as a programming language. Based on the current advanced development concept Model-Based Design (MBD)process, the three aspects mentioned above are closely linked. Each experiment is implemented in MATLAB and Simulink, and the numerical simula-tion test is carried out on a built simulation platform. Readers can upload the controller to the Pixhawk autopilot using automatic code generation technology and form a closed loop with a given real-time simulator for Hardware-In-the-Loop (HIL) testing. After that, the actual flight with the Pixhawk autopilot can be performed. This is by far the most complete and clear guide to modern drone fundamentals I've seen.It covers every element of these advanced aerial robots and walks through examples and tutorials based on the industry's leading open-source software and tools. Read this book, and you'll be well prepared to work at the leading edge of this exciting new industry. Chris Anderson, CEO 3DR and Chairman, the Linux Foundation's Dronecode Project The development of a multicopter and its applications is very challenging in the robotics area due to the multidomain knowledge involved. This book systematically addresses the design, simulation and implementation of multicopters with the industrial leading workflow – Model-Based Design, commonly used in the automotive and aero-defense industries. With this book, researchers and engineers can seamlessly apply the concepts, workflows, and tools in other engineering areas, especially robot design and robotics ap-plication development.