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Sommario/riassunto

How to design and use unmanned vehicles for remote sensing and actuation-a practical guideOwing to their ability to replace human beings in dangerous, tedious, or repetitive jobs, unmanned systems are increasingly used in river/reservoir surveillance and the monitoring and control of chemical/nuclear leaks. This book presents new and innovative techniques for the design and use of unmanned vehicles for remote sensing and distributed control in agricultural and environmental systems.Focusing on small, unmanned aerial vehicles (UAVs), Remote Sensing and Actuation Using Unmanned Vehicles first describes the design of AggieAir, a low-cost UAV platform for remote sensing. It then explains how to solve state estimation and advanced lateral flight controller design problems in the small UAV platform before examining remote sensing problems with single and multiple UAVs. The book also includes flight test results-building upon these measurements to present actuation algorithms for such missions as diffusion control.Inside, readers will discover:. How to develop low-cost, small unmanned aircraft systems (UAS) for remote sensing applications. What autopilots are available for small UAVs, including a series of flight test protocols for the safe operation of small UAVs. How to design and implement advanced fractional-order controllers for autonomous navigation of UAVs. Voronoi diagram-based cooperative controller design for diffusion control in unmanned vehicles for both

sensing and actuation. How to design and validate consensus-based controllers for rendezvous and formation control in unmanned ground vehiclesIncluding an appendix with IMU communication protocols and Paparazzi UAV code modification guides, Remote Sensing and Actuation Using Unmanned Vehicles is an invaluable guide for scientists and engineers in remote sensing, aerospace, robotics, and autonomous control.