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Nota di contenuto	<p>1. Underwater robots: a fascinating challenge / Andrea Manuello -- 1.1 Introduction -- 1.2 Biomimetic fin propulsion -- 1.3 Biomimetic fin actuation -- 1.4 Biomimetic integrated fin-actuator systems: a case study -- 1.5 Conclusion -- 1.6 References --</p> <p>2. A novel lighter than air vehicle - Flying Octopus / Zheng Li -- 2.1 Introduction -- 2.2 The design of Flying Octopus - a bio-inspired design -- 2.2.1 Design considerations -- 2.2.2 The design -- 2.2.3 The wire-driven flapping wing -- 2.3 Modeling and simulation -- 2.3.1 Wing kinematics -- 2.3.2 Propulsion model -- 2.3.3 Propulsion simulation -- 2.4 Motion control -- 2.4.1 Wing flapping motion -- 2.4.2 Flying Octopus motion control -- 2.5 Prototype and experiment testing -- 2.5.1 Flying Octopus prototype -- 2.5.2 Indoor experiments -- 2.6 Conclusions -- 2.7 References --</p> <p>3. Visual attitude estimation and stabilization of flying robots / Cihat Bora Yigit -- 3.1 Unmanned aerial vehicles -- 3.2 Attitude estimation with vision -- 3.3 Quadrotor UAV modeling and control -- 3.4 Robot design and manufacturing -- 3.5 Experiments -- 3.6 Closure -- 3.7 Acknowledgment -- 3.8 References --</p> <p>4. Robot swarms: dynamics and control / Veysel Gazi -- 4.1 Introduction -- 4.2 Agent dynamics -- 4.2.1 Fully actuated agent model -- 4.2.2 Non-holonomic agent dynamics -- 4.2.3 Simplified or high-level agent models -- 4.3 Problem definitions -- 4.3.1 Aggregation and social foraging -- 4.3.2 Formal control and swarm</p>

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5. Mobile robots for earth exploration: applications, technologies and image processing techniques for navigation / Filippo Bonaccorso -- 5.1 Introduction -- 5.2 Applications of robots for earth explorations -- 5.2.1 Volcanic explorations -- 5.2.2 Meteorite search -- 5.2.3 Search and rescue -- 5.2.4 Humanitarian demining -- 5.2.5 Underground explorations -- 5.3 Related technologies -- 5.3.1 Sun synchronous robots -- 5.3.2 Traversability analysis -- 5.3.3 Localization and map building -- 5.3.4 Traction control -- 5.4 Current challenges -- 5.5 A road detection and obstacle avoidance method of using a stereo camera for autonomous navigation -- 5.5.1 Related works and overview -- 5.5.2 Drivable surface detection outline -- 5.5.3 Drivable surface detection setup -- 5.5.4 Obstacle detection -- 5.5.5 Control of the robotic platform -- 5.5.6 Final considerations -- 5.6 Conclusions and future work -- 5.7 References.

Sommario/riassunto

One key point for mobile robots is interaction with the environment in which the mobile robot moves and corresponding solutions can determine the success or failure of the motion. Indeed, the mechanical design is not very often considered a critical issue, but rather it is often included as an issue in the overall design of mechanical solutions within servo-controlled operation and environment interaction. A second important issue is the acceptance of robotic systems and the corresponding psychological aspects, when robots are proposed to operators and users in fields with very low levels of technical means in their current work practice. These two subjects are the core of the discussions in this book, which aims to illustrate not only the potential but also the problems for the dissemination of mobile robots and mobile robotic systems in all human activities with service aims.
