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Autore	Bonnet Frank
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Nota di contenuto	Introduction -- State of the art in fish behavioral studies using robots and robotic-fish design -- The zebrafish Danio rerio as a model animal for animal-robot interaction studies -- FishBot, the fast miniature wheeledmobile robot -- RiBot, the actuated robotic fish lure -- Automated setup to conduct experiments with mixed societies of fish and robots -- CATS, the control and tracking software -- Biomimetic behavior models for controlling a robotic fish -- Application of a fractional factorial design to model the attractiveness of a robotic fish to a shoal of zebrafish -- Using a circular corridor to characterize the attractive cues of lures for a shoal of zebrafish -- Towards mixed societies of fish and robots -- Conclusion.
Sommario/riassunto	Robotic animals are nowadays developed for various types of research, such as bio-inspired robotics, biomimetics and animal behavior studies. More specifically, in the case of collective animal behavior research, the robotic device can interact with animals by generating and exploiting signals relevant for social behavior. Once perceived by the animal society as conspecific, these robots can become powerful

tools to study the animal behaviors, as they can at the same time monitor the changes in behavior and influence the collective choices of the animal society. In this book, we present novel robotized tools that can integrate shoals of fish in order to study their collective behaviors. We used the current state of the art on the zebrafish social behavior to define the specifications of the robots, and we performed stimuli analysis to improve their developments. Bio-inspired controllers were designed based on data extracted from experiments with zebrafish for the robots to mimic the zebrafish locomotion underwater. Experiments involving mixed groups of fish and robots qualified the robotic system to be integrated among a zebrafish shoal and to be able to influence the collective decisions of the fish. These results are very promising for the field of animal-robot interaction studies, as we showed the effect of the robots in long-duration experiments and repetitively, with the same order of response from the animals.