Pfanne

In-Hand Object Localization and Control: Enabling Dexterous Manipulation with Robotic Hands

This book introduces a novel model-based dexterous manipulation framework, which, thanks to its precision and versatility, significantly advances the capabilities of robotic hands compared to the previous state of the art. This is achieved by combining a novel grasp state estimation algorithm, the first to integrate information from tactile sensing, proprioception and vision, with an impedance-based in-hand object controller, which enables leading manipulation capabilities, including finger gaiting. The developed concept is implemented on one of the most advanced robotic manipulators, the DLR humanoid robot David, and evaluated in a range of challenging real-world manipulation scenarios and tasks. This book greatly benefits researchers in the field of robotics that study robotic hands and dexterous manipulation topics, as well as developers and engineers working on industrial automation applications involving grippers and robotic manipulators.

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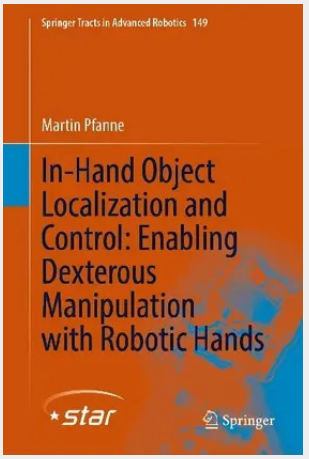

139,09 €
129,99 € (zzgl. MwSt.)

Lieferfrist: bis zu 10 Tage

Artikelnummer: 9783031069666
Medium: Buch
ISBN: 978-3-031-06966-6
Verlag: Springer
Erscheinungstermin: 01.09.2022
Sprache(n): Englisch
Auflage: 1. Auflage 2022
Serie: Springer Tracts in Advanced Robotics
Produktform: Gebunden
Gewicht: 540 g
Seiten: 180
Format (B x H): 160 x 241 mm

Kundenservice Verlag Dr. Otto Schmidt KG
Neumannstraße 10, 40235 Düsseldorf | kundenservice@otto-schmidt.de | 0221-93738-997 (Inland)