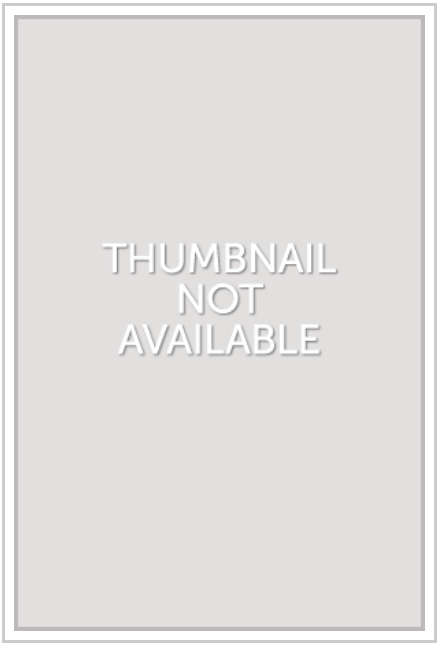


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A user-oriented, comprehensive system for the 6 DoF recognition of arbitrary rigid household objects.

By Jan Fischer

Fraunhofer Verlag Okt 2015, 2015. Taschenbuch. Book Condition: Neu. 21x14.8x cm. Neuware - The objective of this thesis is the development of a model-based object recognition system for the 6 degrees of freedom localization of typical rigid household objects that explicitly enables an intuitive teaching of new objects. When considering the perceptual process of object recognition in its entirety, it may be divided into the three main areas: data acquisition, object modeling and object localization. The different areas are examined individually and distinct contributions to each of them are presented and evaluated. The originating conditions for the recognition process system are one-shot images of range and color data. Considering data acquisition, it is most often taken for granted that a sensor delivers directly 2.5D data or color information. However, when combining different sensor modalities, it is possible to exceed the data quality of a single sensor. The thesis follows this idea and presents a novel sensor fusion technique for data acquisition that combines the 2.5D input data from a stereo and a range imaging system. Regarding object modeling, the thesis presents a method for dense object modeling directly on the robot using its manipulator and camera system. Additionally, two stand-alone...

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