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Consumer Depth Cameras for Computer Vision

Research Topics and Applications

The potential of consumer depth cameras extends well beyond entertainment and gaming, to real-world commercial applications. This authoritative text reviews the scope and impact of this rapidly growing field, describing the most promising Kinect-based research activities, discussing significant current challenges, and showcasing exciting applications. Features: presents contributions from an international selection of preeminent authorities in their fields, from both academic and corporate research; addresses the classic problem of multi-view geometry of how to correlate images from different viewpoints to simultaneously estimate camera poses and world points; examines human pose estimation using video-rate depth images for gaming, motion capture, 3D human body scans, and hand pose recognition for sign language parsing; provides a review of approaches to various recognition problems, including category and instance learning of objects, and human activity recognition; with a Foreword by Dr. Jamie Shotton.

The launch of Microsoft's Kinect, the first high-resolution depth-sensing camera for the consumer market, generated considerable excitement not only among computer gamers, but also within the global community of computer vision researchers. The potential of consumer depth cameras extends well beyond entertainment and gaming, to real-world commercial applications such virtual fitting rooms, training for athletes, and assistance for the elderly. This authoritative text/reference reviews the scope and impact of this rapidly growing field, describing the most promising Kinect-based research activities, discussing significant current challenges, and showcasing exciting applications. Topics and features: presents contributions from an international selection of preeminent authorities in their fields, from both academic and corporate research; addresses the classic problem of multi-view geometry of how to correlate images from different viewpoints to simultaneously estimate camera poses and world points; examines human pose estimation using video-rate depth images for gaming, motion capture, 3D human body scans, and hand pose recognition for sign language parsing; provides a review of approaches to various recognition problems, including category and instance learning of objects, and human activity recognition; with a Foreword by Dr. Jamie Shotton of Microsoft Research, Cambridge, UK. This broad-ranging overview is a must-read for researchers and graduate students of computer vision and robotics wishing to learn more about the state of the art of this increasingly "hot" topic.
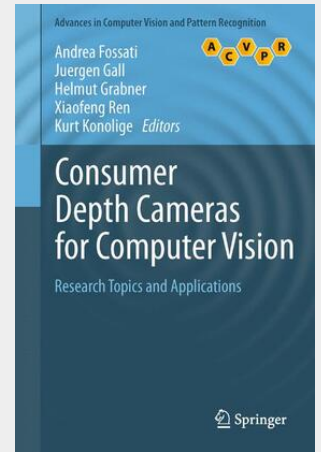
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