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Titolo	On Hierarchical Models for Visual Recognition and Learning of Objects, Scenes, and Activities [[electronic resource] /] / by Jens Spehr
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Soggetti	Robotics Automation Computational intelligence Optical data processing Pattern recognition Robotics and Automation Computational Intelligence Image Processing and Computer Vision Pattern Recognition
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Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Introduction -- Probabilistic Graphical Models -- Hierarchical Graphical Models -- Learning of Hierarchical Models.-Object Recognition -- Human Pose Estimation -- Scene Understanding for Intelligent Vehicles -- Conclusion.
Sommario/riassunto	In many computer vision applications, objects have to be learned and recognized in images or image sequences. This book presents new probabilistic hierarchical models that allow an efficient representation of multiple objects of different categories, scales, rotations, and views. The idea is to exploit similarities between objects and object parts in order to share calculations and avoid redundant information.

Furthermore inference approaches for fast and robust detection are presented. These new approaches combine the idea of compositional and similarity hierarchies and overcome limitations of previous methods. Besides classical object recognition the book shows the use for detection of human poses in a project for gait analysis. The use of activity detection is presented for the design of environments for ageing, to identify activities and behavior patterns in smart homes. In a presented project for parking spot detection using an intelligent vehicle, the proposed approaches are used to hierarchically model the environment of the vehicle for an efficient and robust interpretation of the scene in real-time.
