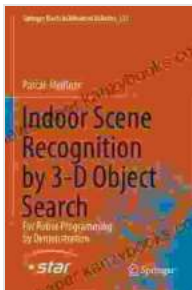


Indoor Scene Recognition By Object Search: Unlocking the Secrets of Indoor Environments

Indoor environments are complex and visually rich, presenting challenges for traditional computer vision algorithms. Indoor Scene Recognition (ISR) aims to understand and interpret indoor scenes, enabling a wide range of applications such as indoor navigation, robotics, and smart home automation. Object search, a fundamental component of ISR, plays a crucial role in extracting meaningful information from indoor environments.

This comprehensive book, "Indoor Scene Recognition By Object Search", provides an in-depth exploration of object-based ISR techniques. With a focus on practical implementation, it offers a comprehensive guide to understanding, designing, and evaluating ISR systems.



Indoor Scene Recognition by 3-D Object Search: For Robot Programming by Demonstration (Springer Tracts in Advanced Robotics Book 135) by Kathy Ceceri

★★★★☆ 4.4 out of 5

Language : English

File size : 3505 KB

Screen Reader: Supported

Print length : 132 pages

Lending : Enabled

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Object Detection and Recognition

The foundation of ISR lies in object detection and recognition. Object detection identifies and localizes objects within an image, while recognition determines the specific type of object. This book covers a range of object detection and recognition algorithms, including region-based detectors, deformable part models, and deep learning-based approaches.

Scene Understanding Through Object Search

Object search extends object detection and recognition to the scene level. By searching for specific objects within an image, ISR systems can infer the scene's layout, semantics, and functionality. The book presents various object search algorithms, such as spatial matching, bag-of-words models, and graph-based techniques.

Applications in Indoor Navigation and Robotics

ISR has a significant impact on indoor navigation and robotics. By recognizing objects in indoor environments, robots can localize themselves, plan paths, and interact with their surroundings. The book highlights the integration of ISR into robotic systems for exploration, surveillance, and human-robot interaction.

Integration with Other Modalities

ISR often benefits from the integration with other sensor modalities such as depth cameras, LiDAR, and inertial sensors. The book explores multi-modal ISR approaches that leverage complementary information from different sources to enhance scene understanding and robustness.

Performance Evaluation and Benchmarking

Evaluating the performance of ISR systems is crucial for optimizing and comparing different algorithms. The book introduces various evaluation metrics and benchmarks specifically designed for ISR. It provides guidelines for conducting fair and rigorous performance evaluations.

Case Studies and Applications

To demonstrate the practical relevance of ISR, the book presents a range of case studies and applications. These case studies cover topics such as indoor object detection, scene classification, semantic mapping, and indoor localization.

"Indoor Scene Recognition By Object Search" is an authoritative guide that provides a comprehensive overview of object-based ISR techniques. This book empowers researchers, developers, and practitioners with the knowledge and tools to develop innovative ISR systems for a variety of applications. With its practical approach and insightful case studies, this book is an essential resource for anyone seeking to unlock the secrets of indoor environments.



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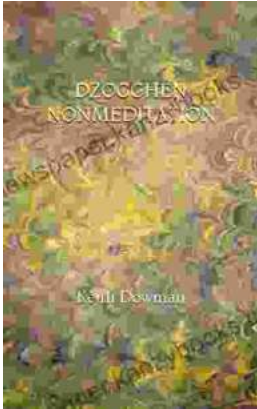
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