

Preface

Computer vision is an interdisciplinary of computer science and artificial intelligence. It aims to make the computer understand and perceive images and videos like human beings, covering lots of typical tasks such as recognition, reconstruction, motion analysis, and so on. Local image descriptor plays a key role in most of these tasks. Especially, since the milestone work of Scale Invariant Feature Transform (SIFT) was systematically proposed in 2004, we have witnessed various vision applications based on local descriptors in the past decade. After 10 years' development, there are many outstanding methods proposed in the area of local image description that are competent to outperform SIFT in many applications.

This book is specialized in local image descriptors, covering the classical methods and the state-of-the-art methods as well as the burgeoning research topics on this area. It mainly comprises three parts. The first part introduces the classical local descriptors which are widely used in the literature. The second part is focused on the state of the art, i.e., recently developed more robust methods based on intensity orders, and some burgeoning methods that could be a promising future research direction. The third part gives some hands-on exemplar applications of local descriptors. Therefore, by reading this book, readers can rapidly know what a local image descriptor is and what it can do. As many local descriptors with different properties are introduced in the book, along with their advantages and disadvantages, it will be beneficial to researchers and practitioners who are searching for solutions for their specific applications or problems.

The book offers a rich blend of theory and practice. It is suitable for graduates, researchers, and practitioners interested in computer vision both as a learning text and as a reference book.

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