

Preface

This book is about the Motion History Image (MHI) and its developments. Broadly, it falls in the arena of computer vision and image processing. On a smaller scale, the book is on action/activity/gesture/gait recognition and human behavior analysis. It is known that human action analyses and recognition are challenging problems due to large variations in human motion and appearance, camera viewpoint, and various other issues related to environment settings. Though the field of action and activity representation and recognition is relatively old, yet it is not well understood by the student and research communities. Some important but common motion recognition problems are even now unsolved properly by the computer vision community. However, in the past decade, a number of good approaches have been proposed and evaluated subsequently by many researchers. Among those methods, MHI method and its variants get significant attention from many researchers in the computer vision field due to their better robustness and performance.

This book attempts to reduce the gap of information and materials on comprehensive outlook—through various strategies from scratch to mainly the MHI method and its variants, challenges, and applications. This book targets the students and researchers who have knowledge on image processing at a basic level and would like to explore more on this area and do research. The step-by-step methodologies will encourage one to move forward for a comprehensive knowledge on computer vision for recognizing various human actions, with the aid of the concept of the motion history images and its variants.

Some good features of this book are:

- No book is available as per my knowledge that covers action recognition considering the MHI in a comprehensive manner in the arena of computer vision.
- Both students (who have basic knowledge on image processing) and researchers can use this book for their academic learning and research purposes.
- The book covers the MHI—a state-of-the-art method on recognition approach and it can guide a fellow on how to move forward.

- This book can be used as a textbook (full or partial) for students of level-2 or above, who have studied basic image processing already in an earlier session—both for undergraduate and graduate students.

The book comprises four chapters. [Chapter 1](#) has background on action recognition. [Chapter 2](#) presents some aspects of action recognition. As the book is targeted to be a shortened one, not much details have been covered in these chapters. In [Chap. 3](#), the core chapter of on the *Motion History Image* method and its variants, detailed analysis, and variants are covered. This chapter illustrates on how to advance from one method to another, how to improve an existing method and mitigate its shortcoming, how to employ an approach in various other applications, etc. Therefore, this chapter is highly beneficial for an enthusiastic researcher or student to move forward. Finally, [Chap. 4](#) covers some databases that are employed for the MHI method. Due to page limits, detailed issues are not covered but referred for further reading. I hope that this book will have an impact, serve the community in a positive direction, and help people to learn.

For any query on this book or corrections, please write to me. I am thankful to my teachers, co-researchers, and students. All images are produced, except some of these which are taken with the kind permission of Springer Science+Business Media B.V. A few images are created by Upal Mahbub. I am grateful to Ahmed Boudissa for his kind time to check the book. I specially thank Simon Rees of *Springer* for his constant support to finish the book.
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Preferred websites:

<http://IJEI.org>

<http://ICIEV.org>

<http://IJCVSP.com>

<http://benjapan.org/IJE>

<http://benjapan.org/ICEAB>

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