

FRONTIERS IN IMAGE PROCESSING & COMPUTER VISION



Editors
AJUNE WANIS ISMAIL
MOHD SHAFRY MOHD RAHIM



UTM
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This book delves into cutting-edge techniques in the fields of computer vision, image processing, and biometrics, with a particular focus on solving real-world challenges in visual data recognition and enhancement. It covers a broad range of topics, from improving facial caricature and iris recognition in challenging environments to enhancing scarred fingerprints and leveraging augmented reality for feature extraction. By exploring both theoretical foundations and practical applications, the book aims to equip researchers, engineers, and professionals with the knowledge and tools needed to advance in fields such as security, digital imaging, and interactive technologies. Through detailed methodologies and case studies, it offers valuable insights into optimising and applying visual recognition technologies across various domains.



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CONTRIBUTORS

Aida Ali *Faculty of Computing, Universiti Teknologi Malaysia, Johor Bahru*

Ajune Wanis Ismail *Faculty of Computing, Universiti Teknologi Malaysia, Johor Bahru*

Athaya Maitsa Ghyskellya *Faculty of Computing, Universiti Teknologi Malaysia, Johor Bahru*

Fazliaty Edora Fadzli *Faculty of Computing, Universiti Teknologi Malaysia, Johor Bahru*

Goh Eg Su *Faculty of Computing, Universiti Teknologi Malaysia, Johor Bahru*

Jumail Taliba *Faculty of Computing, Universiti Teknologi Malaysia, Johor Bahru*

Md Sah Hj. Salam *Faculty of Computing, Universiti Teknologi Malaysia, Johor Bahru*

Mohd Shafry Mohd Rahim *Faculty of Computing, Universiti Teknologi Malaysia, Johor Bahru*

Muhamad Musadiq Muhammad Aizudin *Faculty of Computing, Universiti Teknologi Malaysia, Johor Bahru*

Muhammad Anwar Ahmad *Faculty of Computing, Universiti Teknologi Malaysia, Johor Bahru*

Norhaida Mohd Suaib *Faculty of Computing, Universiti Teknologi Malaysia, Johor Bahru*

Nur Dinie Safirah Mohd Nazir *Faculty of Computing, Universiti Teknologi Malaysia, Johor Bahru*

Nur Zuraifah Syazrah Othman *Faculty of Computing, Universiti Teknologi Malaysia, Johor Bahru*

Nurul Izzati Mohamad Noor *Faculty of Computing, Universiti Teknologi Malaysia, Johor Bahru*

Ong Le Foo *Faculty of Computing, Universiti Teknologi Malaysia, Johor Bahru*

Pang Yee Yong *Faculty of Computing, Universiti Teknologi Malaysia, Johor Bahru*

Saad Kabir Uddin *Faculty of Computing, Universiti Teknologi Malaysia,
Johor Bahru*

Sim Hiew Moi *Faculty of Computing, Universiti Teknologi Malaysia, Johor Bahru*

Suriati Sadimon *Faculty of Computing, Universiti Teknologi Malaysia,
Johor Bahru*

Tarmizi Adam *Faculty of Computing, Universiti Teknologi Malaysia, Johor Bahru*

PREFACE

The rapidly evolving fields of computer vision and image processing are transforming the way we perceive, interpret, and interact with visual data. *Frontiers in Image Processing and Computer Vision* is a curated exploration of cutting-edge methodologies and practical innovations aimed at addressing real-world challenges across a range of visual computing domains. The primary objective of this book is to provide a comprehensive overview of advanced techniques in areas such as biometrics, image enhancement, recognition systems, and augmented reality. From facial caricature analysis and iris recognition in challenging conditions to offline signature verification and fingerprint enhancement, each chapter presents targeted solutions backed by rigorous research and experimental validation. Special attention is also given to emerging strategies for next-generation applications in security, interactive systems, and digital imaging. This book is intended for researchers, engineers, and professionals who seek both foundational knowledge and forward-looking insight into the integration of image processing and computer vision. Whether applied in academic research, security systems, or commercial applications, the ideas and tools presented here aim to advance the development of intelligent visual technologies. We hope this work not only informs but also sparks new exploration at the intersection of vision, data, and innovation.

Ajune Wanis Ismail
Mohd Shafry Mohd Rahim
Universiti Teknologi Malaysia
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PART I — EXPLORING VISUAL COMPUTING

