



# Emerging Trends in Image Processing, Computer Vision and Pattern Recognition (Emerging Trends in Computer Science and Applied Computing)

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**Emerging Trends in Image Processing, Computer Vision and Pattern Recognition (Emerging Trends in Computer Science and Applied Computing)** From Morgan Kaufmann

*Emerging Trends in Image Processing, Computer Vision, and Pattern Recognition* discusses the latest in trends in imaging science which at its core consists of three intertwined computer science fields, namely: Image Processing, Computer Vision, and Pattern Recognition. There is significant renewed interest in each of these three fields fueled by Big Data and Data Analytic initiatives including but not limited to; applications as diverse as computational biology, biometrics, biomedical imaging, robotics, security, and knowledge engineering. These three core topics discussed here provide a solid introduction to image processing along with low-level processing techniques, computer vision fundamentals along with examples of applied applications and pattern recognition algorithms and methodologies that will be of value to the image processing and computer vision research communities.

Drawing upon the knowledge of recognized experts with years of practical experience and discussing new and novel applications Editors' Leonidas Deligiannidis and Hamid Arabnia cover;

- Many perspectives of image processing spanning from fundamental mathematical theory and sampling, to image representation and reconstruction, filtering in spatial and frequency domain, geometrical transformations, and image restoration and segmentation
- Key application techniques in computer vision some of which are camera networks and vision, image feature extraction, face and gesture recognition and biometric authentication
- Pattern recognition algorithms including but not limited to; Supervised and unsupervised classification algorithms, Ensemble learning algorithms, and parsing algorithms.
- How to use image processing and visualization to analyze big data.

- Discusses novel applications that can benefit from image processing, computer vision and pattern recognition such as computational biology, biometrics, biomedical imaging, robotics, security, and knowledge engineering.
- Covers key application techniques in computer vision from fundamentals to mid to high level processing some of which are camera networks and vision, image feature extraction, face and gesture recognition and biometric authentication.
- Presents a number of pattern recognition algorithms and methodologies including but not limited to; supervised and unsupervised classification algorithms, Ensemble learning algorithms, and parsing algorithms.
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### **Editorial Review**

#### **About the Author**

Leonidas Deligiannidis is a Professor of Computer Science and Networking at Wentworth Institute of Technology in Boston. His research examines Image Processing, Network Security and Information Visualization. Deligiannidis earned his PhD in Computer Science at Tufts University.

Hamid R. Arabnia is currently a Full Professor of Computer Science at University of Georgia where he has been since October 1987. His research interests include Parallel and distributed processing techniques and algorithms, interconnection networks, and applications in Computational Science and Computational Intelligence (in particular, in image processing, medical imaging, bioinformatics, and other computational intensive problems). Dr. Arabnia is Editor-in-Chief of The Journal of is Associate Editor of IEEE Transactions on Information Technology in Biomedicine . He has over 300 publications (journals, proceedings, editorship) in his area of research in addition he has edited two titles Emerging Trends in ICT Security (Elsevier 2013), and Advances in Computational Biology (Springer 2012).

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