PRESENTS RECENT SIGNIFICANT AND RAPID DEVELOPMENT IN THE FIELD OF 2D AND 3D IMAGE ANALYSIS

2D and 3D Image Analysis by Moments, is a unique compendium of moment-based image analysis which includes traditional methods and also reflects the latest development of the field.

The book presents a survey of 2D and 3D moment invariants with respect to similarity and affine spatial transformations and to image blurring and smoothing by various filters. The book comprehensively describes the mathematical background and theorems about the invariants but a large part is also devoted to practical usage of moments. Applications from various fields of computer vision, remote sensing, medical imaging, image retrieval, watermarking, and forensic analysis are demonstrated. Attention is also paid to efficient algorithms of moment computation.

Key features:

- Presents a systematic overview of moment-based features used in 2D and 3D image analysis.
- Demonstrates invariant properties of moments with respect to various spatial and intensity transformations.
- Reviews and compares several orthogonal polynomials and respective moments.
- Describes efficient numerical algorithms for moment computation.
- It is a "classroom ready" textbook with a self-contained introduction to classifier design.
• The accompanying website contains around 300 lecture slides, Matlab codes, complete lists of the invariants, test images, and other supplementary material.

*2D and 3D Image Analysis by Moments*, is ideal for mathematicians, computer scientists, engineers, software developers, and Ph.D students involved in image analysis and recognition. Due to the addition of two introductory chapters on classifier design, the book may also serve as a self-contained textbook for graduate university courses on object recognition.

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**Jan Flusser** is a professor of Computer Science and a director of the Institute of Information Theory and Automation, Czech Academy of Sciences, Prague, Czech Republic. His research interest covers moments and moment invariants, image registration, image fusion, multichannel blind deconvolution, and super-resolution imaging. He has authored and coauthored more than 200 research publications, including the monograph *Moments and Moment Invariants in Pattern Recognition* (Wiley, 2009), and has delivered 20 tutorials and invited/keynote talks at major conferences. His publications have received about 10,000 citations. Jan Flusser received several scientific awards and prizes, such as the Award of the Chairman of the Czech Science Foundation (2007), the Prize of the Czech Academy of Sciences (2007), the SCOPUS 1000 Award presented by Elsevier (2010), and the Felber Medal of the Czech Technical University for excellent contribution to research and education (2015).

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