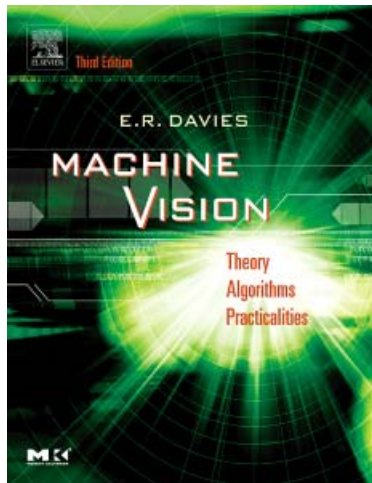


Machine Vision: Theory, Algorithms and Practicalities, Third Edition

By E.R. Davies, *Royal Holloway, University of London*

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In the last 40 years, machine vision has evolved into a mature field embracing a wide range of applications including surveillance, automated inspection, robot assembly, vehicle guidance, traffic monitoring and control, signature verification, biometric measurement, and analysis of remotely sensed images. While researchers and industry specialists continue to document their work in this area, it has become increasingly difficult for professionals and graduate students to understand the essential theory and practicalities well enough to design their own algorithms and systems. This book directly addresses this need.

As in earlier editions, Davies clearly and systematically presents the basic concepts of the field in highly accessible prose and pictures, covering essential elements of the theory while emphasizing algorithmic and practical design constraints. In this thoroughly updated edition, he divides the material into horizontal levels of a complete machine vision system. Part 1 introduces images and image processing and demonstrates how to develop a basic set of image analysis tools. Part 2 examines how to obtain abstract information about images with the aid of transform methods. Part 3 explains the many issues needed for understanding real scenes. Part 4 brings together crucial techniques for the production of practical real-time visual pattern recognition systems. Part 5 works to systematize the subject of machine vision design, summarizing the tradeoffs between the parameters in vision algorithms. Throughout the book, application case studies demonstrate specific techniques and illustrate key constraints for designing real-world machine vision systems.

Professor E.R. Davies graduated from Oxford University in 1963 with a First Class Honours degree in Physics. After 12 years' research in solid state physics, he became interested in vision and is currently Professor of Machine Vision at Royal Holloway, University of London. He has worked on image filtering, shape analysis, edge detection, Hough transforms, robust pattern matching, and artificial neural networks, and is involved in algorithm design for inspection, surveillance, real-time vision and a number of industrial applications. He has published over 180 papers and two books—*Electronics, Noise and Signal Recovery* (1993), and *Image Processing for the Food Industry* (2000)—as well as the present volume. Professor Davies is on the Editorial Boards of *Real-Time Imaging*, *Pattern Recognition Letters* and *Imaging Science*. He holds a DSc at the University of London and is a Fellow of the IoP and the IEE, and a Senior Member of the IEEE. He is on the Executive Committees of the BMVA and the IEE Visual Information Engineering Professional Network.

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