

<<机器视觉>>

图书基本信息

书名：<<机器视觉>>

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## 前言

An important focus of advances in mechatronics and robotics is the addition of sensory inputs to systems with increasing "intelligence." Without doubt, sight is the "sense of choice." In everyday life, whether driving a car or threading a needle, we depend first on sight. The addition of visual perception to machines promises the greatest improvement and at the same time presents the greatest challenge. Until relatively recently, the volume of data in the images that make up a video stream has been a serious deterrent to progress. A single frame of very modest resolution might occupy a quarter of a megabyte, so the task of handling thirty or more such frames per second requires substantial computer resources. Fortunately, the computer and communications industries' investment in entertainment has helped address this challenge. The transmission and processing of video signals are an easy justification for selling the consumer increased computing speed and bandwidth. A digital camera, capable of video capture, has already become a fashion accessory as part of a mobile phone. As a result, video signals have become more accessible to the serious engineer. But the task of acquiring a visual image is just the tip of the iceberg. While generating sounds and pictures is a well-defined process (speech generation is a standard "accessibility" feature of Windows), the inverse task of recognizing connected speech is still at an unfinished state, a quarter of a century later, as any user of "dictation" software will attest. Still, analyzing sound is not even in the same league with analyzing images, particularly when they are of realworld situations rather than staged pieces with synthetic backgrounds and artificial lighting. The task is essentially one of data reduction. From the many megabytes of the image stream, the required output might be a simple "All wheel nuts are in place" or "This tomato is ripe." But images tend to be noisy, objects that look sharp to the eye can have broken edges, boundaries can be fuzzy, and straight lines can be illusory. The task of image analysis demands a wealth of background know-how and mathematical analytic tools. Roy Davies has been developing that rich background for well over two decades. At the time of the UK Robotics Initiative, in the 1980s, Roy had formed a relationship with the company United Biscuits. We fellow researchers might well have been amused by the task of ensuring that the blob of jam on a "Jaffacake" had been placed centrally beneath the enrobing chocolate.

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### 内容概要

本书是机器视觉课程的理想教材，作者清晰、系统地阐述了机器视觉的基本概念，介绍理论的基本元素的同时强调算法和实用设计的约束。

书中阐述各个主题时，既阐述了基本算法，又介绍了数学工具。

此外，本书还使用案例演示具体技术的应用，并阐明设计现实机器视觉系统的关键约束。

本书适合作为高等院校计算机及电子工程相关专业研究生的教材，更是从事机器视觉、计算机视觉和机器人领域研究的人员不可多得的技术参考书。

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### 作者简介

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英国物理学会会士、IEE会士、英国机器视觉协会的执行委员。

毕业于牛津大学, 现任伦敦大学皇家霍洛威学院机器视觉教授。

在机器视觉、图像分析、自动视觉检测、噪声抑制技术等方面有丰富的教学和科研经验。

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插图：

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### 媒体关注与评论

“ 本书将图像处理的理论与应用实践完美地结合起来，是机器视觉领域研究人员的必读之作。  
” ——John Billingsley，南昆士兰大学“ 前两版已经奠定了本书在机器视觉领域中独一无二的地位，它是对重要的图像处理和计算机视觉算法进行详细分析的知识宝库！  
这一版在此基础上增加了最新进展，是一部全面而且与时俱进的权威著作。  
” ——Farzin Deravi，肯特大学

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### 编辑推荐

《机器视觉理论、算法与实践(英文版·第3版)》能够满足广大读者学习和掌握机器视觉知识的需求。全书图文并茂，清晰、系统地阐述了基本概念，提供了丰富的应用案例和代码，强调了算法和实用设计的各种约束条件。

新版做了全面的更新，反映了最新进展，内容更加全面。

40年来，机器视觉在各行各业得到了广泛的应用，包括自动检测、机器人组装、行车导引、流量监控、签名验证、生物测量、遥感图像分析等。

但是另一方面，面对大量新的研究成果，要充分理解相关的理论和应用，进行算法和系统的设计，却越来越困难。

《机器视觉理论、算法与实践(英文版·第3版)》是机器视觉课程的理想教材，已经成为国内外很多名校的指定教学参考书。

同时，《机器视觉理论、算法与实践(英文版·第3版)》也是工程技术人员不可或缺的权威参考书。



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