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# Natural Image Statistics

A Probabilistic Approach to Early Computational Vision.

Series: Computational Imaging and Vision

- Very first book on this topic
- Accessible to a wide audience from different disciplines
- Topic is very timely and of increasing importance

**Aims and Scope** This book is both an introductory textbook and a research monograph on modeling the statistical structure of natural images. In very simple terms, "natural images" are photographs of the typical environment where we live. In this book, their statistical structure is described using a number of statistical models whose parameters are estimated from image samples. Our main motivation for exploring natural image statistics is computational modeling of biological visual systems. A theoretical framework which is gaining more and more support considers the properties of the visual system to be reflections of the statistical structure of natural images because of evolutionary adaptation processes. Another motivation for natural image statistics research is in computer science and engineering, where it helps in development of better image processing and computer vision methods. While research on natural image statistics has been growing rapidly since the mid-1990s, no attempt has been made to cover the field in a single book, providing a unified view of the different models and approaches. This book attempts to do just that. Furthermore, our aim is to provide an accessible introduction to the field for students in related disciplines.

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