

<<视觉科学>>

图书基本信息

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## 内容概要

本书收纳了中科大校友的25篇关于视觉科学的代表性文章。

书的内容主要分为两大部分：视觉神经科学；视觉感知与认知。

其中，第一部分中的 A部分（皮层前的处理过程）总共包含六章，分别涉及光感受器退化疾病的恢复、视皮层-顶盖系统的改变、视网膜神经节细胞与外膝体细胞的感受野特性以及视皮层对外膝体的反馈作用； B部分（皮层中的处理过程）用九章的篇幅涵盖了视皮层对图像和运动的处理、视皮层中视空间的映射和皮层反应特性的关系、注意的作用、知觉学习以及衰老对视皮层处理的影响等内容；

C部分（眼动系统）中的三章内容重点介绍了眼动神经元的反应特性和眼动指令信号的可靠性。

第二部分包括七章，介绍了基本的视觉感知过程，如早期视觉通路中的分辨能力、对距离的感知、对等亮度条件下彩色运动图形的感知、对拓扑结构的感知以及特征分类等。

此外，还涉及计算视觉、视觉工作记忆和蜜蜂的决策制定等主题。

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Preface  
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## 章节摘录

These authors find a preponderance of LGNd cells preferring horizontal and vertical stimuli and suggest that cortical afferents are involved in the generation of LGNd orientation sensitivity ( see also Daniels et al. , 1977 ) . Other authors report that the orientation biases of LGNd relay cells strictly reflect those of their retinal afferents ( Soodak et al. , 1987 ) . These authors favor the idea that the orientation sensitivity of LGNd relay cells originates in the retina and reflects the anatomically generated ( Leventhal and Schall , 1983 ) , linear , orientation-sensitive response ( Levick and Thibos , 1982 ) of the retinal ganglion cells providing their afferents. The present study is arguably the most exhaustive to date. We believe that some of the disagreements described above are more apparent than real and may have resulted because previous studies included only relatively small samples of cells and , thus , differences in laminar location , eccentricity , polar angle , cell type could not be adequately controlled. For example , our findings that relay cells preferring different orientations are clustered and that radial and tangential orientations are overrepresented makes claims regarding the overall distribution of preferred orientations based upon small samples of cells especially hard to interpret. For example , if cells are recorded mainly from regions of the LGNd subserving the horizontal and vertical meridians , then an apparent preponderance of these orientations should result. Our finding that the radial bias is strongest in regions of the LGNd subserving the horizontal meridian further complicates matters. It should be noted that our results are generally consistent with the idea that the orientation-sensitive response of most LGNd cells is a direct reflection of their retinal inputs ( Soodak et al. , 1987 ) . Evidence for this stems from our finding that the overall distributions of the orientation biases of LGNd cells are similar to those reported previously for retinal ganglion cells ( Levick and Thibos , 1982; Leventhal and Schall , 1983 ) and that the receptive fields of most of the cells we studied were consistent with the model proposed by Soodak et al. ( 1987 ) . Our results do not support the idea ( Vidyasagar and Urbas , 1982; Vidyasagar , 1984 ) that LGNd relay cells are much more orientation sensitive than their retinal inputs. However , it should be noted that some of the most orientation-sensitive cells we studied exhibited "butterfly-shaped" orientation tuning curves even at relatively low spatial frequencies. A number

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### 编辑推荐

《中国科学技术大学校友文库》之《视觉科学》一书主要收纳了中科大校友的25篇关于视觉科学的代表性文章。

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《Vision Science (视觉科学) (全英文)》适合从事相关研究工作的人员参考阅读。

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