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私の My favorite books 本棚



● Pattern Recognition

At the Aoki lab, recognition of various patterns from images is a major theme of research. Humans are able to respond flexibly to various situations by relating (as diverse patterns) enormous volumes of information to concepts and by accumulating them as knowledge. This book is ideal for learning basic theories about pattern recognition and machine learning – the technologies widely applied for various scenes of our modern life. As such, we make the most of this book at our lab.

● Substances and Memory

This book is a masterpiece by the French philosopher H. L. Bergson who also has a great knowledge of science. As opposed to R. Descartes's dualism, in this book Bergson develops a new dualism by introducing the concept known as "Image" as an intermediate concept between body (objects) and mind (spirit) – the key, distinctive concepts of Descartes' dualism. All that we can obtain from images are the results of direct measurement of objects and phenomena only. By taking an indirect approach, I think we may be able to extract abstract information, such as consciousness, that lies behind physical measurement. As a source of new perspectives, this book provides me with valuable hints for my research.

● Cognitive Psychology

This book is an easy-to-understand introduction to cognitive psychology, covering not only the past and present of this science, but even new fields yet to be developed. In particular, the book mentions hot topics such as cognitive evolution and brain, social cognition, culture and cognition, media informatics and cognition, and so on. In order to realize advanced sensing and artificial intelligence, I think it's necessary to find out new angles of approach while learning from the human cognitive mechanism. Answers are yet to be found, but I'm inclined to approach the goal from new angles by learning not only engineering, but cognitive psychology and related interdisciplinary areas as well.

● Gibson – The Ecological Approach to Visual Perception

In this book, J. J. Gibson, the author, develops what is known as the direct perception theory that approaches visual perception from an ecological viewpoint. Instead of defining visual perception as a perceptual process by interaction between "the brain and eyes", Gibson says we should consider visual perception as the result of "how the eyes (the organ attached to the head) see" a particular object in a given environment as they move around in the environment. The content of this book is rather difficult, but it's a truly reliable reference for me to grasp and implicate human behavior in the environmental context.

● Computer Vision – Algorithms and Application

Computer vision and pattern recognition are two of the fundamental fields of research we are handling at our lab. This book is rich in content, introducing from past achievements in computer vision to the latest algorithms, and even examples of their application. As such, this book is often referred to as "Bible" for this field of science. Some of our lab's doctoral-course students lent their hands in translating the book into Japanese.

● DAI-KAO-TEN

Published by the Japanese Academy of Facial Studies and others, this pictorial book uses a wide variety of photos and illustrations to introduce facial studies from various fields of study and approaches. The academy is characterized as an interdisciplinary organization with membership of researchers from academic fields ranging from psychology, anthropology, medicine and dentistry to cosmetology. When I was a graduate student, I took part in this academy, approaching from the engineering field of facial image recognition and synthesis. These cross-cultural, joint research experiences in those days are proving to be a great asset for my lab management today.