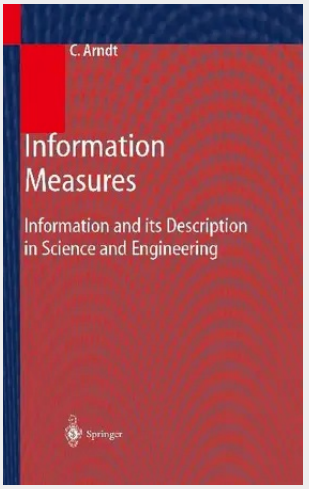
Arndt

Information Measures

Information and its Description in Science and Engineering



Information Measures introduces the mathematical description of information in science and engineering, treating the necessary mathematical theory in a more vivid way than in the usual theoretical proof structure. This enables readers to develop an idea of the connections between different information measures and to understand the trains of thoughts in their derivation. As there exist a great number of different possible ways to describe information, these measures are presented in a coherent manner. Examples of the measures treated: Shannon information, applied in coding theory; Akaike information criterion, used in system identification to determine auto-regressive models and in neural networks to identify the number of neurons; and Cramer-Rao bound or Fisher information, describing the minimal variances achieved by unbiased estimators. "A tool [to show] bioinformaticians… how to handle immense amounts of raw data, such as are generated from genome mapping, make sense of them, and render them accessible to scientists." IEEE Engineering in Medicine and Biology

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