

Rényi's Information Measures

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In 1961, the legendary Hungarian mathematician Alfred Rényi (1921-1970) proposed generalizations of Shannon's entropy as well as of Kullback-Leibler's relative entropy. Since then, generalizations of mutual information have also been proposed based on Rényi's divergence.

We review the major applications of Rényi's information measures in the analysis of the fundamental limits of data compression, data transmission, large deviations theory, random search, and hypothesis testing, as well as their interplay with Shannon's information measures.