Information theory in disguise

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Abstract

Shannon introduced the zero-error capacity of a discrete memoryless channel in 1956 as the largest rate at which errorless transmission of data is possible over the channel. In his paper he translated the problem of determining this rate into the language of graph theory. This led Claude Berge to the concept of perfect graphs and his celebrated conjectures, proved by Lovász and Chudnovsky, Robertson, Seymour and Thomas several decades later. The speaker, with various co-authors, generalised Shannon's graph capacity to hypergraphs, directed graphs, infinite per- mutation graphs and families thereof. In this way we are confronted with a wealth of known and new combinatorial problems of a similar nature, amounting to a theory of asymptotic growth of ate i56 441h1 432 83 Tm0 g0 mutat8 7429 t 4 4 e 21at 2o 6 TJET 4p 6 9thg