

The Honey-Do Problem Revisited: Sources with Memory, Mismatch, and a Divergence

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ABSTRACT

In the recently-introduced Honey-Do problem a source sequence is described using a fixed number of bits, based on which a list that is guaranteed to contain the source sequence must be produced. We seek the shortest description length that allows some moment of the listsize to approach one.

This problem was recently solved for memoryless sources using a technique that is based on the method of types, but the technique does not extend to general sources with memory.

In this talk I shall present a different approach that works also for sources with memory, provided that their Renyi-entropy rate is well defined. The new approach enables us to study the penalty for designing the scheme based on the wrong source law (mismatch) and, in this way, motivates a new definition of Renyi Divergence.

Based on joint work with Christoph Bunte.

About the speaker:

Amos Lapidoth received the B.A. degree in mathematics (1986), the B.Sc. degree in electrical engineering (1986), and the M.Sc. degree in electrical engineering (1990) all from the Technion-Israel Institute of Technology. He received the Ph.D. degree in electrical engineering from Stanford University in 1995.

In the years 1995-1999 he was an Assistant and Associate Professor at the Department of Electrical Engineering and Computer Science at the Massachusetts Institute of Technology, and was the KDD Career Development Associate Professor in Communications and Technology. He is now Professor of Information Theory at ETH Zurich in Switzerland. His research interests are in digital communications and information theory.