

Fountain Codes for Fast, Reliable, and Scalable Data Distribution

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A Fountain code is a code of fixed dimension and a limitless block-length. This is a new class of codes with very interesting applications. In this talk I will show how Fountain codes can be applied to the problem of reliable, robust, and speedy transmission of data over a heterogeneous network from one or multiple transmitters to one or multiple receivers. I will then talk about applications to the design of reliable end-to-end data transmission systems in unreliable unicast, multicast, or even peer-to-peer networks. In the last part of the talk I will introduce two classes of probabilistic Fountain codes that are used in commercial systems today. These codes, called LT- and Raptor codes, have very efficient encoding and decoding algorithms. I will introduce the mathematical theory of these codes and give some insights into their design.

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