Regenerating Codes for Distributed Storage

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Regenerating codes are a class of distributed storage codes that optimally trade the bandwidth needed for repair of a failed node with the amount of data stored per node of the network. Distributed storage codes find application in content distribution networks. An [n; k; d] regenerating code permits the data to be recovered by connecting to any k of the n nodes in the network, while requiring that repair of a failed node be made possible by connecting to any d nodes. The novelty in a regenerating code lies in that the amount of data downloaded for repair is typically much smaller when compared to the size of the source data. In this talk, we present explicit and optimal constructions of regenerating codes. It will also be shown how a secrecy feature can be inbuilt into the code construction.

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