



**INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI
SHORT ABSTRACT OF THESIS**

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SHORT ABSTRACT

The notion of coded caching for the content distribution networks was introduced by Maddah-Ali and Niesen. We looked into several aspects of optimal coded caching schemes as part of my doctoral thesis. We studied the multi-objective nature of the caching problem in detail and demonstrated that a universal scheme that simultaneously achieves optimal rates for all demand types does not exist. Motivated by this result, we introduced the notion of Pareto optimal schemes in coded caching and demonstrated that two previously known schemes are Pareto optimal. The exact optimality of a scheme for a particular demand-type was another aspect we looked into. We proposed a new caching scheme and derived a set of new lower bounds to prove the optimality of the scheme.