Asymptotic property of universal lossless coding for independent piecewise identically distributed sources

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Abstract

The universal lossless source coding problem is one of the most important problem in communication systems. The aim of source coding is to compress data to reduce costs in digital communication. Traditional universal source coding schemes are usually designed for stationary sources.

Recently, some universal codes for nonstationary sources have been proposed. Independent piecewise identically distributed (i.p.i.d.) sources are simple nonstationary sources that parameter changes discontinuously. In this paper, we assume new i.p.i.d. sources class, and we prove that Bayes codes minimize the mean redundancy when parameter transition pattern is known and parameter is unknown.

Keywords: Universal source coding, Bayes codes, nonstationary sources.

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