

STOCHASTIC COMPLEXITY FOR PIECEWISE STATIONARY MEMORYLESS SOURCES

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ABSTRACT

A piecewise stationary memoryless source (PSMS) is a probabilistic model for which the parameter value changes over segments. We are concerned with the issue of tracking and detecting parameter changes of PSMSs. As for the performance measure, we consider the minimax regret for PSMSs and derive stochastic complexity for PSMSs as an optimal solution to it. Since the stochastic complexity is hard to calculate exactly, we introduce an algorithm that approximately attains it. We design it with the technique of discretizing the parameter space and derive an upper bound on its total code-length, which is related to the complexity of PSMSs.