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Outline

Gaussian mixture parameter estimation with known means and unknown class-dependent variances

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Abstract

This paper develops a recursive, convergent estimator for some parameters of Gaussian mixtures. The M class conditional (component) densities of the mixture random variable are Gaussian with known and distinct means and unknown and possibly different variances. A joint estimator of M prior (mixing) probabilities and M class conditional variances is derived. Sufficient conditions on the data and control parameters are derived for the estimator to converge. Convergence of the estimator follows from the use of a stochastic approximation theorem. Techniques to extend the estimators for the case of successive class labels forming a

Markov chain are mentioned. The estimator has applications in blind parameter estimation in digital communication with symbol dependent noise variance and in image compression.

Keywords

Symbol-dependent variances; Class-dependent additive Gaussian noise; Blind parameter estimation; Adaptive receivers; Nonuniform image quantization

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Vitae

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