

Bayesian signal Estimation and direction – of – arrival estimation in non-Gaussian noise
using Gaussian mixture models

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Abstract

Non-gaussianity of signal / noise often results in significant performance degradation for systems optimized under the Gaussian assumption. So, such systems require a different modeling and processing approach. In this talk, estimation techniques based on Gaussian mixture models of signal and noise will be presented. Two models will be considered: (1) infinite mixture of Gaussians (IMG) based on the Gaussian transform, and (2) a finite Gaussian mixture model (GMM). Two estimation problems will be discussed, viz. Bayesian estimation of non-Gaussian signals in colored non-Gaussian noise, and direction-of-arrival estimation in colored non-Gaussian noise. Simulation results will be presented to compare the performance of the IMG / GMM based methods with other known techniques.