

Nonnegative Matrix Factorization Applications in Machine Learning

by
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Abstract

A number of recent machine learning algorithms incorporate nonnegativity constraints on matrices to enforce sparsity and find novel feature representations. The resulting algorithms are quite intuitive and their convergence properties can be analyzed using the Frobenius-Perron theorem. I will discuss some recent generalizations of these techniques for applications in acoustic echo cancellation and source estimation, as well as in analyzing astrophysical data. These new algorithms incorporate additional information about the underlying nonnegative matrices, such as Bayesian priors, Toeplitz structure, and multilinear forms.