

## **Matrix factorization: applications and algorithms**

**Abstract:** Matrix factorization is the task of writing a given matrix as a combination (sum or product) of two or more matrices, which satisfy certain nice constraints (such as sparsity or low rank etc.). Apart from the classical factorizations in linear algebra such as Eigenvalue decomposition, Cholesky decomposition etc., this problem arises in various incarnations in several different applications e.g., recommender systems, image and video processing, achieving robustness to outliers in data analysis etc. Alternating minimization is an extremely successful way of solving such matrix factorization problems in practice. In this talk, we will describe the algorithm, the mathematical underpinnings of why it works and then illustrate its use in some of the applications mentioned above.