Final Year Projects

Supervisor: Liangshao Hou

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Project 1. Nonnegative matrix factorization in data science: Nonnegative matrix factorization (NMF) is a widely used technique in data science for dimensionality reduction. The task of NMF is to approximate a given data matrix by the production of two low-rank nonnegative matrices. The fundamental aim of NMF revolves around approximating a provided data matrix through the multiplication of two low-rank nonnegative matrices. Despite its widespread application, determining the appropriate approximation rank, also termed as model-order selection, remains a longstanding challenge. This predicament has been extensively studied even preceding the inception of NMF.

The overarching objective of this project is to delve into various practical methodologies aimed at ascertaining the optimal approximation rank for NMF. Proficiency in basic programming using MATLAB is a prerequisite for undertaking this project.

Key References: N. Gillis, Nonnegative matrix factorization. SIAM, 2020.