California State University San Bernardino
School of Computer Science and Engineering

Independent Study Presentation

Date:

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Time:

3:30PM

Place:

JBH 358

Title:

Expectation-maximization Based Automatic Rank Determination Study for Non-negative Matrix Factorization

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Abstract:

Expectation-maximization Based Automatic Rank Determination Study for Non-negative Matrix Factorization was the overall purpose of this Independent study. The objective of this quarter was to learn and master a powerful part based unsupervised machine learning method. To also be able to apply this particular method on different datasets to represent feature extraction as well as feature recognition. Since this method is based off different Non-negative Matrix Factorization (NMF) methods, regardless of probabilistic or canonical NMF, however, both of them are not capable of handling ground-truth bases discovering and the model then comes into order determination problems. The main concern is this truly works in general if the model order of basis matrices are predefined. By investigating the Expectation-maximization (EM) based optimization method to try to apply it to NMF to automatically determine the model order as well as discover the data structure on synthetic and real-world datasets to show its effectiveness.