

Applications of Matrix Methods in Artificial Intelligence and Machine Learning

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Objectives and Description of the Workshop. With availability of large amount of data, the main challenge of our time is to get insightful information from the data. Therefore, artificial intelligence and machine learning are two main paths in getting the insights from the data we are dealing with. The data we currently have is a new and unprecedented form of data, "Modern Data". "Modern Data" has unique characteristics such as, extreme sparsity, high correlation, high dimensionality and massive size. Modern data is very prevalent in all different areas of science such as Medicine, Environment, Finance, Marketing, Vision, Imaging, Text, Web, etc. A major difficulty is that many of the old methods that have been developed for analyzing data during the last decades cannot be applied on modern data. One distinct solution, to overcome this difficulty, is the application of matrix computation and factorization methods such as SVD (singular value decomposition), PCA (principal component analysis), and NMF (non- negative matrix factorization), without which the analysis of modern data is not possible. This workshop covers the application of matrix computational science techniques in dealing with Modern Data

Keywords: Artificial Intelligence, Machine Learning, Matrix Factorization