"Data and Web Science" Lecture Series
Department of Informatics, Aristotle University of Thessaloniki, Greece
(http://dws.csd.auth.gr)

INVITED LECTURE

THURSDAY MARCH 21, 2019
5pm – 7pm, AMPHITHEATER II
ARISTOTLE UNIVERSITY RESEARCH DISSEMINATION CENTER (KEDEA)
AUTH CAMPUS, 3is SEPTEMVRIOU, THESSALONIKI
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Title: Recent Advances in Item-Based Recommendation Approaches

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Abstract: Recommender systems are designed to identify the items that a user will like or find useful based on the user's prior preferences and activities. These systems have become ubiquitous and are an essential tool for information filtering and (e-)commerce. One of the classical approaches for identifying the set of items to be recommended rely on the idea that users will like items that are similar to those that they liked in the past. These item-based nearest-neighbor approaches are simple to understand, lead to explainable recommendations, and can be easily extended to capture different user behavioral models and types of available information. However, in their classical form, the performance of these methods is worse than approaches based on latent-space models and/or deep neural networks. This talk presents an overview of recent methodological advances in developing item-based nearest-neighbor-based recommender systems that have substantially improved their performance. The key components in these methods are: (i) the use of statistical learning to estimate the desired item-item similarity matrices, (ii) the use of multi-granularity models to enhance their personalization capabilities, (iii) the use of lower-dimensional representations to handle issues associated with sparsity, and (iv) the combination of neighborhood and random-walk based approaches to further enhance their coverage and accuracy. Our experiments show that their overall performance is competitive and often outperforms that of current state-of-the-art approaches.

George Karypis is a Distinguished McKnight University Professor and an ADC Chair of Digital Technology at the Department of Computer Science & Engineering at the University of Minnesota, Twin Cities. His research interests span the areas of data mining, high performance computing, information retrieval, collaborative filtering, bioinformatics, cheminformatics, and scientific computing. His research has resulted in the development of software libraries for serial and parallel graph partitioning (METIS and ParMETIS), hypergraph partitioning (hMETIS), for parallel Cholesky factorization (PSPASES), for collaborative filtering-based recommendation algorithms (SUGGEST), clustering high dimensional datasets (CLUTO), finding frequent patterns in diverse datasets (PAFI), and for protein secondary structure prediction (YASSPP). He has coauthored over 280 papers on these topics and two books ("Introduction to *Protein Structure Prediction: Methods and Algorithms*" (Wiley, 2010) and "Introduction to Parallel Computing" (Publ. Addison Wesley, 2003, 2nd edition)). In addition, he is serving on the program committees of many conferences and workshops on these topics, and on the editorial boards of the IEEE Transactions on Knowledge and Data Engineering, ACM Transactions on Knowledge Discovery from Data, Data Mining and Knowledge Discovery, Social Network Analysis and Data Mining Journal, International Journal of Data Mining and Bioinformatics, the journal on Current Proteomics, Advances in Bioinformatics, and Biomedicine and Biotechnology. He is a Fellow of the IEEE.