

Lokacija: Fakultet Organizacionih Nauka (Jove Ilica 154)

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**Analysis of Temporal Social Networks and Approximation of
the Markov Blanket in a Kernel-Induced Space**

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ABSTRACT:

We will first present a new method that simultaneously predicts the links and the attribute values in temporal social networks based solely on historical data. Instead of training a single joint probability model for this prediction task, we build two decoupled conditional exponential random graph models based on the observation over Gibbs sampling inference. These mutually dependent conditional models are used to predict the network structures and the attribute values in a sequence of alternative steps.

Next, we will show how to efficiently approximate the Markov Blanket which is a set of variables that can shield a certain variable from the target as to find a minimum subset of the most informative variables for predictive modeling. The new method is based on measuring dependence among variables by Hilbert-Schmidt criterion in a kernel-induced space. This process that is applicable to high dimensional classification and regression problems allows effective approximation of the Markov Blanket that consists of multiple dependent variables and in addition it removes both irrelevant and redundant variables.

Presented results are obtained in collaboration with Y. Guo, Q. Lou and V. Ouzienko at Temple University. Both articles will appear at the *Proc. 19th European Conf. on Artificial Intelligence*, Lisbon, Portugal, Aug. 2010.

SPEAKER: Zoran Obradovic, professor of Computer and Information Sciences and the director of the Center for Information Science and Technology at Temple University in Philadelphia is an internationally recognized leader in data mining and bioinformatics. He has published about 220 articles addressing data mining challenges in health informatics, climate and ecological management, the social sciences, and other domains. Obradovic was the program chair at six, track chair at seven and program committee member at about 40 international conferences on data mining. He currently serves as an editorial board member at seven journals and is the executive editor at the journal on Statistical Analysis and Data Mining which is the official publication of the American Statistical Association (ASA).