Dr. Nikos Deligiannis, Electronics and Informatics (ETRO) Department, Vrije Universiteit Brussel, Belgium

Title

Deep Learning Techniques for Big Data

Abstract

This talk focuses on two challenges of machine learning and AI for big data, namely, dealing with incomplete data and learning on graphs. The first challenge arises in different domains due to the nature of the data collection processes. In recommender systems, for example, only a small set of user-item (e.g., movies) interactions is observed, resulting in incomplete data matrices. In e-commerce systems, user-generated data usually contains one or multiple missing attributes, resulting in incomplete data tables. The second challenge is about effectively making sense of graph data, which is the most natural way to represent information in many applications, from user interactions in social networks to semantic relationships among entities in knowledge graphs. Methods that overcome these two challenges could therefore benefit a great number of big data applications.

In this talk we will address the two challenges by leveraging the deep-learning paradigm. We will present a set of novel matrix completion solutions to deal with the incomplete data problem and new deep neural network models for learning on graphs. Finally, we will present several applications of our frameworks ranging from recommender systems (see the Netflix problem) to smart-city data processing.

Brief Bio

Nikos Deligiannis is associate professor with the Electronics and Informatics (ETRO) department at Vrije Universiteit Brussel (VUB) and principle investigator at imec in Belgium. He received the Diploma in electrical and computer engineering from University of Patras, Greece, in 2006, and the PhD in engineering sciences from Vrije Universiteit Brussel, in 2012.

From 2013 to 2015, he was a postdoctoral research associate at the Department of Electronic and Electrical Engineering at University College London, UK. His research focuses on machine learning, explainable AI and signal processing with applications in big data processing and analysis, image/video processing, and computational imaging.

He has authored over 120 journal and conference publications, book chapters, and two international patent applications. He received various awards for his research including the 2013 Scientific Prize IBM-FWO Belgium, the 2017 EURASIP Best PhD Award and the 2019 IEEE International Conference on Image Processing Best Paper Award.