THE CENTRE FOR PATTERN ANALYSIS AND MACHINE INTELLIGENCE IN ASSOCIATION WITH IEEE SYSTEMS, MAN & CYBERNETICS, COMPUTATIONAL INTELLIGENCE, AND SIGNAL PROCESSING CHAPTERS OF KW SECTION PRESENTS:

Linked Data, Concepts, and Fuzziness

Speaker: Professor Marek Reformat, Professor,
Department of Electrical and Computer Engineering, University of Alberta

Date: Thursday November 7, 2013

Time: 1:00 pm – 2:00 pm

Place: University of Waterloo, DC-1304

Abstract:

Importance of the Internet is growing. It is not only due to a rising amount of information stored on it, but also due to our rising dependence on it. The search processes are challenging and information presented to us hinges very much on the ability of search engines to visit multiple nodes and index discovered data. One of the most important contributions of the proposed concept of Semantic Web is the Resource Description Framework (RDF): recommended as a data representation format. The fundamental idea of RDF is to represent each piece of data as a triple: subject-property-object. In general a subject of one triple can be an object of another triple, and vice versa. This means that represented data is a mesh of interconnected triples. Such a situation creates an environment suitable for constructing processes that analyze data, and convert it to useful information.

The presentation is focused on a method of extracting concepts based on data represented with RDF. In particular, an idea of treating RDF triples as feature-based descriptions of different entities is presented and explored; a method for determining similarity between entities is revealed. It can evaluate similarity in specific contexts, and take into account importance of entity features. Further, a methodology suitable for identifying and building clusters of entities, as well as naming them is introduced. It incorporates aspects of fuzziness in a process of determining a degree of conformance of entities to specific concepts.

Bio:

Marek Reformat received his M.Sc. degree (with honors) from Technical University of Poznan, Poland, and his Ph.D. from University of Manitoba, Canada. Presently, he is a professor with the Department of Electrical and Computer Engineering, University of Alberta. The goal of his research activities is to develop methods and techniques for intelligent data modeling and analysis leading to translation of data into knowledge, as well as to design systems that possess abilities to imitate different aspects of human behavior. In this context, he recognizes the concepts of Computational Intelligence – with fuzzy computing and possibility theory in particular – are key elements necessary for capturing relationships between pieces of data and knowledge, and for mimicking human ways of reasoning about opinions and facts. Dr. Reformat also works on Computational Intelligence based approaches for dealing with information stored on the web. He applies elements of fuzzy sets to social networks, Linked Open Data, and Semantic Web in order to handle inherently imprecise information, and provide users with unique facts retrieved from the data. All his activities focus on introduction of human aspects to web and software systems what will lead to more human-aware and human-like systems.

Dr. Reformat is a past president of the North American Fuzzy Information Processing Society, and a vice president of the International Fuzzy Systems Association. He has published over 90 peer-reviewed papers. He has been a member of program committees of almost 60 international conferences related to Computational Intelligence and Software Engineering.

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