Title of the lecture: **Conceptual graph based modeling and querying methods for RDBMS and semi-structured data**

Conceptual Graphs (CGs) are a knowledge representation language based on the existential graphs of Ch. S. Peirce and the semantic networks of Artificial Intelligence, which were first introduced by J.F. Sowa in 1976 [3]. CGs are also a modeling and design language, which is human readable and computer tractable. This makes CGs suitable for a large variety of applications.

During this lecture, I would like to present a CG based modeling for various databases and exemplify this method on RBDMS and semi-structured data (especially XML data) pointing out inherent differences. I would like also to discuss about a CG based query designer for the relational data model and for XQuery. [4, 5, 6]

I intend to highlight that the expressive power of CGs consist of the fact that the representation method, based on these graphs, gives a natural and intuitive tool for database structure design and database querying, especially in the case of semi-structured data: they help to present the structure of semi-structured data in a form which is also accessible for non-experts.

Bibliography:

[1] J. F. Sowa: *Conceptual Graphs for a data base interface.* IBM Journal of Research and Development, vol. 20, no. 4, pp. 336–357, 1976.

[2] J. F Sowa: *Conceptual Graphs.* In F. van Harmelen, V. Lifschitz, and B. Porter (editors) Handbook of Knowledge Representation, Chapter 5, pp. 213–237. Elsevier, 2008.
http://www.jfsowa.com/cg/cg_hbook.pdf

[3] About conceptual Graphs on J.F. Sowa's website: http://www.jfsowa.com/cg/index.htm

[4] V. Varga, C. Sacarea, and A. Takacs, *Conceptual graphs based representation and querying of databases*, in Proceedings of the IEEE AQTR 2010, pp. 1-6., cited in: J. Lloret-Gazo, A survey on visual query systems in the web era, in DEXA 2016, Porto, pp. 343-351.

[5] V. Varga, C. Săcărea, A. É. Molnár: *Conceptual Graphs Based Modeling of Semi-structured Data*, International Conference on Conceptual Structures (ICCS 2018), Springer, 2018., pp. 167-175.

[6] A. É. Molnár, V. Varga, C. Săcărea: C*onceptual graphs based modeling and querying of XML data*, 2017 25th International Conference on Software, Telecommunications and Computer Networks (SoftCOM), 2017, pp. 23-28.