Bernd Malle

Scientific Résumé, October 2016

Personal Data

Job Title	PhD Researcher at the Holzinger Group, hci-kdd.org
Address	Institute for Medical Informatics, Statistics and Documentation, Medical University, Auenbruggerplatz 2/V, A-8036 Graz, Austria
Phone	+43 / 660-38-50-308
E-Mail	b.malle@hci-kdd.org
Birth	October 8th 1979, Graz, Austria

Keywords

Graph based machine learning, Snippet learning from word vectors, personal context descriptors, graph based recommenders, machine learning on perturbed (graph) knowledge bases

Research Statement

Bernd is currently interested in 3 different but connected areas of CS – as a starting point he strives to apply recent advances in Word Embedding on what he terms *Snippet Learning* - learning from small snippets of text - by constructing novel descriptors for aggregate word vectors. Realizing that most information conveyed by such Snippets lies in the context applied by an interpreter rather than the content itself, Bernd will research (graph based) context descriptors for humans, organizations and activities and combine them with snippet descriptors in order to maximize information gain from minimal data. However, personal / social information is considered sensitive and its unrestricted gathering and use scrutinized in today's society. Therefore, Bernd is curious about the degree of distortion (e.g. via anonymization or perturbation of tabular & network data) such knowledge bases can be subjected to before a collapse of ML performance occurs. In summary, Bernd is concerning himself with *privacy aware, graph based machine learning applied to Natural Language Processing.*

150-words Bio

Bernd graduated in Software Development with a MSc. Thesis on *Graphinius – an online graph exploration and analysis platform* at Graz University of Technology, supervised by Prof. Dr. A. Holzinger. He participated in 2 software-related research projects so far (one of which he initiated) and has contributed Web based software for graph extraction from (skin cancer) images as well as a generic graph computation and analysis library for real-time computations inside a Browser. This work was supplemented by his commitment to supervise a Masters project in web-based 3D graph visualization as well as a Bachelor thesis in applying Graphinius to the simulation of neurological processes. Bernd also recognizes the importance of human-in-the-loop approaches to data mining tasks and is therefore concerned about finding ways to visualize high-dimensional data structures for intuitive user understanding, currently within research experiments about interactive anonymization. Rounding off his academic curiosity, Bernd is always interested in packaging his insights into usable, web-based, Software.

Education and selected work

2016-now Member of the Austrian *KIRAS* funded project *Darknet* as employee of *Secure Business Austria (SBA) Research*, Vienna, Austria

2016-now PhD student in CS on privacy aware graph based machine learning applied to NLP

2016 *S*upervised one MSc. project and one BSc. thesis for project *Graphinius.*

2015-2016 Initiated Project *Graphinius*: An online graph exploration and analysis platform; created a JS-based graph library

2014 Wrote a web-based software for graph extraction from images for project iKNOdis

2011-now Completed Coursera courses: Machine Learning, Algorithm Design and Analysis, Startup engineering (all Stanford), Computing for data analysis (Johns Hopkins)

2005-2016 Studied Software Development @ Graz University of Technology, BSc, MSc

2002-2005 Studies of economics at Karl Franzens University, Graz (uncompleted)

1999-2002 College of Further Education

1997-1998 ITCP - Information Technology Certified Professional

Publications

Dragana Miljkovic, Darko Aleksovski, Vid Podpecan, Nada Lavrac, Bernd Malle, Andreas Holzinger (2016). Machine Learning and Data mining Methods for Managing Parkinson's Disease, In: Springer Lecture Notes in Computer Science LNCS 9605, pp. 209–220

Malle, Bernd, Peter Kieseberg, Edgar Weippl, and Andreas Holzinger. "The Right to Be Forgotten: Towards Machine Learning on Perturbed Knowledge Bases." In International Conference on Availability, Reliability, and Security, pp. 251-266. Springer International Publishing, 2016.

Kieseberg, Peter, Bernd Malle, Peter Frühwirt, Edgar Weippl, and Andreas Holzinger. "A tamper-proof audit and control system for the doctor in the loop." Brain Informatics: 1-11.

Holzinger, A., Malle, B., Giuliani, N.: On Graph Extraction from Image Data. In: Slezak, D., Peters, J.F., Tan, A.-H., Schwabe, L. (eds.) Brain Informatics and Health, BIH 2014, Lecture Notes in Artificial Intelligence, LNAI 8609, pp. 564-573. Springer, Heidelberg, Berlin (2014)

Holzinger, A., Malle, B., Bloice, M., Wiltgen, M., Ferri, M., Stanganelli, I., Hofmann-Wellenhof, R.: On the Generation of Point Cloud Data Sets: the first step in the Knowledge Discovery Process. In: Holzinger, A., Jurisica, I. (eds.) Interactive Knowledge Discovery and Data Mining: State-of-the-Art and Future Challenges in Biomedical Informatics, Springer Lecture Notes in Computer Science LNCS 8401, pp. 57-80. Springer, Berlin, Heidelberg (2014)

Conference attendance

August 2016: Speaker at the Privacy Aware Machine Learning (PAML) Workshop at the Conference on Availability, Reliability and Security (ARES), Salzburg, Austria.

August 2016: Session chair at the International Workshop on Cyber Crime (IWCC) at the Conference on Availability, Reliability and Security (ARES), Salzburg, Austria.

Sept. 2016: Speaker at the Current AI Research in Austria (CAIRA) Workshop at the Künstliche Intelligenz (KI) Conference, Klagenfurt, Austria