

## HPI Kolloquium / Antrittsvorlesung 24.03.2016, 16:30 Uhr

Hasso-Plattner-Institut, Vorlesungsgebäude, Auditorium 1  
Campus Griebnitzsee, 14482 Potsdam

### “Data Mining: From Raw Data to Valuable Knowledge”

**Prof. Dr. Emmanuel Müller**

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#### **Abstract**

Data is ubiquitous in industrial, scientific and government processes. Data is collected as observation of natural phenomena, data is created from simulation models and experiments, data is used for verification of complex processes, and data is used to guide strategic decisions. Overall, data has a significant influence on the quality of our daily life. However, lack of advanced data mining technology is in clear contrast to the value of data in many application domains. Furthermore, data mining does not end with the execution of algorithms. With data mining algorithms, resulting in discovery of unknown, novel, and unexpected patterns, one should aim at assisting humans in their daily decision making.

With knowledge discovery and data mining we enable an alternative data-driven process for decision makers by focusing on extensive exploitation of available data. With our computer science research we focus on the open challenges in data understanding: We study new data mining concepts that assist humans in their daily decision making. We develop novel algorithms for sensor data streams, high dimensional databases, graph data, and other heterogeneous data resources. Our algorithms allow for efficient and scalable data processing in such big and heterogeneous data repositories, (semi-)automated knowledge discovery in complex databases, and intuitive data exploration by interactive data mining. In all these research fields we focus on the inclusion of the human domain expertise into our data mining methods. This allows humans to steer this data analysis process to novel data-driven hypothesis and a comprehensive understanding of their data with a significant impact on a variety of domains such as geoscience.

#### **Short CV**

Prof. Dr. Emmanuel Müller is head of the Knowledge Discovery and Data Mining Group, a joint research group within the Hasso Plattner Institute at the University of Potsdam and the GFZ German Research Centre for Geosciences. Before, he was independent research group leader at the Karlsruhe Institute of Technology (2010-2015) and Postdoctoral Fellow at the University of Antwerp (2012-2015). Prof. Müller received his Diploma (2007) and his PhD (2010) from RWTH Aachen University. He is active member of several program committees including ACM SIGKDD, IEEE BigData, SIAM SDM, organized several workshops and tutorial at major database and data mining conferences. He is leading the open-source initiative OpenSubspace, in which he provides a general contribution to the research community by repeatable and comparable evaluation of recent data mining approaches.