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CS-Colloquium

# Data Analytics Without Seeing the Data

Dr. Maximilian Ott

Data 61 (CSIRO)

**When?** 9. Mai 2018, 3:00 pm/15:00 Uhr

**Where?** Hörsaal 3 (HS3)  
Währinger Straße 29  
1090 Vienna

## Abstract

Today, we first need to collect data before we can analyse them. This not only creates privacy concerns but also security risks for the collector. For many use cases, we really only want the analysis and data collection becomes the necessary evil.

In this talk we describe some of the fundamental techniques which allow us to **calculate with encrypted data**, as well as **protocols for distributed analysis** and associated **security models** to allow us to give formal guarantees on what every party can or more importantly cannot learn during the computation. We will use some of the standard algorithms, such as logistic regression, to highlight the differences to conventional big-data analytics frameworks.

We will also describe the architecture and some interesting implementation details of our N1 Analytics Platform which is one of the few emerging industry strength (and hopefully, also open-source) implementations in this space. We will present some **performance and scalability measures** we collected from initial customer trials. Finally, we will conclude with a discussion on some of the challenges we face in developing distributed machine learning algorithm which are not only high-performing, but also incorporate their **data confidentiality claims** in a more formal manner.

## Bio

**Dr. Maximilian Ott** is a Sr. Principal Engineer at Data61 where he is currently developing a platform for federated machine learning over encrypted data. Before that he was a founder and CTO of Incoming Media, which combined data science and machine learning to create unique subscriber insights and a superior user experience around mobile video. Before coming to Australia where he held various research leadership positions at NICTA, he was the founder and CTO of Semandex, US which develops a range of cutting edge semantic information processing technologies and tools for information assurance professionals. He also held a Research Professorship at Rutgers University where he was heavily involved in GENI, the US's Future Internet initiative and various EU FIRE programs.

He obtained his PhD from the University in Tokyo and a Dipl.Ing from the Technical University of Vienna.