Building a Computer System for the World's Information

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Abstract: Google's mission is to organize the world's information and make it universally accessible and useful. Obviously, Google has to deal with many problems to successfully fulfill such mission. The talk will address some of these problems with particular emphasis on the issues regarding efficient and scalable information storage, processing, and querying.

The first part of the talk will be focused on the computing platforms used at Google and its hardware design philosophy. We will also explain why it could be beneficial to build warehouse-scale computer facilities using commodity components instead of enterprise components, which are more reliable.

The second part will focus on the software infrastructure. We will describe the architecture of Google filesystem, BigTable data storage, Chubby lock service, and the MapReduce framework. Finally, we will demonstrate how are these technologies combined when solving real-life problems.

Zbyněk Falt (born in 1985) graduated at the Charles University in Prague in 2010. He continued his studies at the Charles University and obtained Ph.D. degree in Software Systems in 2014. His research area was parallel computing and its optimization for modern hardware. Since 2014 he works in Google Zürich as a software engineer in the Search Infrastructure team.