

Next-Generation Hardware for Data Management - more a Blessing than a Curse?

[Abstract]

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ABSTRACT

Recent hardware developments have touched almost all components of a computing system: the existence of many and potentially heterogeneous cores, the availability of volatile and non-volatile main memories with an ever growing capacity, and the emergence of economically affordable, high-speed/low-latency interconnects are only a few prominent examples. Every single development as well as their combination has a massive impact on the design of modern computing systems. However, it is still an open question, if, how, and at which level of detail, a database system has to explicitly be aware of those developments and exploit them using specifically designed algorithms and data structures. Within the talk I will try to give an answer to this question and argue for a clear roadmap of HW/SW-DB-CoDesign especially providing an outlook to upcoming technologies and discussion of their non-functional properties like energy-efficiency and resilience behavior.

About the Author

Wolfgang Lehner is full professor and head of the database technology group at the TU Dresden, Germany. His research is dedicated to database system architecture specifically looking at crosscutting aspects from algorithms down to hardware-related aspects in main-memory centric settings. He is part of TU Dresden's excellence cluster with research topics in energy-aware scheduling, resilient data structures on unreliable hardware, and orchestration of wildly heterogeneous systems; he is also a principal investigator of Germany's national "Competence Center for Scalable Data Services and Solutions" (ScaDS); Wolfgang also maintains a close research relationship with the SAP HANA development team. He serves the community in many PCs, is an elected member of the VLDB Endowment, serves on the review board of the German Research Foundation (DFG), and is an appointed member of the Academy of Europe.