The University of Chicago Computer Science Department

PRESENTS:

"What if we could reason about the design space of storage and indexing in data systems?"

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Abstract:
Data structures are critical in any data-driven scenario, and they define the behavior of modern data systems. However, they are notoriously hard to design due to a massive design space and the dependence of performance on workload and hardware which evolve continuously. In this talk, we ask two questions: What if we knew how many and which data structures are possible to design? What if we could compute the expected performance of a data structure design on a given workload and hardware without having to implement it and without even having access to the target machine? We will discuss our quest for the first principles of data structures to accelerate the process of design and envision new classes of adaptive systems that cross design spaces. We will draw examples from the NoSQL key-value store design space and discuss how to accelerate them by balancing space-time tradeoffs.

Bio:
Stratos Idreos is an assistant professor of Computer Science at Harvard University where he leads DASlab, the Data Systems Laboratory@Harvard SEAS. Stratos works on data system architectures with emphasis on how we can make it easy to design efficient data systems as applications and hardware keep evolving and on how we can make it easy to use these systems even for non-experts. For his doctoral work on Database Cracking, Stratos won the 2011 ACM SIGMOD Jim Gray Doctoral Dissertation award and the 2011 ERCIM Cor Baayen award. He is also a recipient of an IBM zEnterpise System Recognition Award, a VLDB Challenges and Visions best paper award and an NSF Career award. In 2015 he was awarded the IEEE TCDE Rising Star Award from the IEEE Technical Committee on Data Engineering for his work on adaptive data systems.

Wednesday, May 23, 2018
3:00 pm
Ryerson 251
Host: Aaron Elmore
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