THE WEIZMANN INSTITUTE OF SCIENCE
FACULTY OF MATHEMATICS AND COMPUTER SCIENCE

Foundations of Computer Science Seminar

Room 1, Ziskind Building
on Monday, Mar 09, 2015
at 14:30

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When Bh Sequences Meet Bloom Filters, and Hot Topics in Data Centers

Abstract:

Bloom filters and Counting Bloom Filters (CBFs) are widely used in networking device algorithms. They implement fast set representations to support membership queries with limited error. Unlike Bloom filters, CBFs also support element deletions. In the first part of the talk, I will introduce a new general method based on variable increments to improve the efficiency of CBFs and their variants. I will demonstrate that this method can always achieve a lower false positive rate and a lower overflow probability bound than CBFs in practical systems.

Next, I will present ongoing research on data center networking. In particular, I will introduce a new approach to providing network isolation, so customers can feel alone in shared clouds, without any network contention from other customers. I will also demonstrate theoretical conditions for the isolation algorithm.