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THE WEIZMANN INSTITUTE OF SCIENCE  
FACULTY OF MATHEMATICS AND COMPUTER SCIENCE

Faculty Seminar

on Thursday, Dec 26, 2019 at 11:00

De Picciotto Building, Meeting Room 25

Ran Ben Basat Harvard School of Engineering and Applied Sciences

Leveraging Programmable Switches for In-network Computing

Abstract:

The network line rate is constantly on the rise to support the exploding amounts of data. This means that we have less time to process individual packets, despite a growing demand for better network telemetry. Moreover, CPU speeds are not rising at the same rate as we near the end of Moore's law, making it harder to rely on software computations. Programmable hardware switches are an emerging technology that enables flexible packet processing while optimizing for throughput and latency.

In this talk, I will introduce algorithms that leverage programmable switches for accelerating database operations and for improving network telemetry. Switches are orders of magnitude more efficient than traditional hardware accelerators, exist in the datapath, and are ideal for computation offloading. For telemetry, we will discuss how switches can probabilistically encode information across multiple packets to provide fine-grained network visibility with minimal overheads.