MIM WEBINARS

AN IN-MEMORY COMPUTING SERIES

Next Talk: 06/December/2021, 4-5:30pm CET

RACETRACK MEMORIES: FUNDAMENTALS, ARCHITECTURES AND CODE OPTIMIZATION

Prof. Jeronimo Castrillon, TU Dresden

High demands for big data processing, low energy and low latency data access have led to a surge in emerging memory technologies. Among them, racetrack memories (RTMs) are an experimental highly intriguing option for they promise an extreme high density, access latencies comparable to SRAM, low-energy non-volatile storage and innately 3D integration. An RTM is built with magnetic nanowires, each of which can store hundreds of bits by modifying the spin polarization of so-called magnetic domains within the nanowire. This talk reviews the fundamentals of RTMs, briefly touching upon the evolution of materials and devices. We will discuss prominent RTM-based memory architectures, provide an overview of code and data optimization for RTM-friendly access, and briefly discuss reliability mechanisms. Finally, the talk provides insight into recently proposed in-memory computing primitives for RTMs, using hyper-dimensional computing as motivational example.

More information about the event and the speaker: https://www.ict.tuwien.ac.at/staff/taherinejad/MiM/next.html

Mondays in Memory (MIM) is a free biweekly webinar series open to everyone around the world and dedicated to all aspects and technologies related to in-memory computing (including, in a broader sense, near-memory computing too). MIM will be held on the first and third Monday of each month (starting in May 2021) at 4pm CET (7am Pacific time, and 10pm Beijing time).
Each webinar starts with a 40mins talk by a speaker, followed up with a 40mins questions and discussions with the speaker and two panel members. Dr. Nima Taherinejad hosts the webinars, and together with his team they organize the MiM series.

Website: http://www.ict.tuwien.ac.at/staff/ aherinejad/MiM/
Email:nima.taherinejad@tuwien.ac.at

Jeronimo Castrillon is a professor in the Department of Computer Science at the TU Dresden, where he is also affiliated with the Center for Advancing Electronics Dresden (CfAED). He is the head of the Chair for Compiler Construction, with research focus on methodologies, languages, tools and algorithms for programming complex computing systems. He received the Electronics Engineering degree from the Pontificia Bolivariana University in Colombia in 2004, his masters degree from the ALaRI Institute in Switzerland in 2006 and his Ph.D. degree (Dr.-Ing.) with honors from the RWTH Aachen University in Germany in 2013. In 2014, Prof. Castrillon co-founded Silexica GmbH/Inc, a company that provides programming tools for embedded multicore architectures, now with Xilinx Inc.

For more information, please see his webpages at https://cfaed.tu-dresden.de/ccc-staff-castrillon