

## **Design Automation Approaches for Real-Time Edge Computing for Science Applications**

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on line - [meet.google.com/vvr-cxce-cya](https://meet.google.com/vvr-cxce-cya) - miércoles 15 de junio de 2022 - 17:00

*Entrada libre hasta completar el aforo*

### **Resumen:**

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Many emerging applications require methods tailored towards high-speed data acquisition and filtering of streaming data followed by offline event reconstruction and analysis. In this case, the main objective is to relieve the immense pressure on the storage and communication resources within the experimental infrastructure. In other applications, ultra low latency real time analysis is required for autonomous experimental systems and anomaly detection in acquired scientific data in the absence of any prior data model for unknown events. At these data rates, traditional computing approaches cannot carry out even cursory analyses in a time frame necessary to guide experimentation. In this talk, Prof. Ogrenci will present some examples of AI hardware architectures. She will discuss the concept of co-design, which makes the unique needs of an application domain transparent to the hardware design process and present examples from three applications: (1) An in-pixel AI chip built using the HLS methodology; (2) A radiation hardened ASIC chip for quantum systems; (3) An FPGA-based edge computing controller for real-time control of a High Energy Physics experiment.

### **Sobre Seda Ogrenci-Memik:**

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Seda Ogrenci-Memik (IEEE Senior Member in 2005) received the B.S. degree in electrical and electronic engineering from Bogazii University, Istanbul, Turkey, and the Ph.D. degree in computer science from the University of California at Los Angeles, Los Angeles, CA, USA. She is currently a Professor with the Electrical Engineering and Computer Science Department, Northwestern University, Evanston, IL, USA. Furthermore, she is the Director of Computer Engineering Division at ECE Department. Her research interests include embedded and reconfigurable computing, HLS, thermal-aware design automation, and thermal management for microprocessor systems. She has served as a technical program committee member, an organizing committee member, and the track chair of several conferences, including ICCAD, DATE, FPL, GLSVLSI, and ISVLSI. She received the National Science Foundation Early Career Development (CAREER) Award in 2006. She is currently serving on the Editorial Board of the IEEE Transactions on Very Large Scale Integration. In April 2021 she will be joining Google during her sabbatical leave.