Πανεπιστήμιο Κύπρου
University of Cyprus

School of Engineering
Department of Electrical and Computer Engineering

IEEE Advancing Technology for Humanity

Department of Electrical and Computer Engineering

Title: **«Performance implications of faults in microprocessor caches»**

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Abstract:

It appears inevitable that future processors will need to remain functionally correct in the presence of faults, in order to sustain scaling benefits and limit field returns. One of the key obstacles towards such a development is the lack of tractable design-time and cost-efficient dynamic (in-the-field) methods that can accurately assess the performance of processors with faults. In this presentation a first-order analytical method will be introduced that can be used at design-time to rapidly determine the expected performance degradation and performance distribution that will be experienced from the execution of a program in a population of processors which are containing faults in their cache arrays. The presentation argues for the need to design for performance analyzability in the presence of faults and elucidates, specifically for caches, why design-time analysability is facilitated by statistical independence between cache sets. Furthermore a low-cost technique will be presented that dynamically detects and assesses the amount of performance degradation due to faults in caches.

Biography:

Georgios Klokkaris is a PhD student in the department of Electrical and Computer Engineering at the University of Cyprus. He obtained a BSc and MsC in Computer Engineering from the same university . He has been involved in the European FP7 projects "Eurocloud" and "HARPA", as a member of the multi-core Computer Architecture Laboratory (multiCAL). His research interests include computer architecture and fault-tolerant computing.