Ph.D. Program in Electronics, Computer Science and Electrical Engineering

SEMINAR

Energy Optimization in Machine Learning: CPU or GPU? Task-Oriented Programming Strategies

Dr. Belen Bermejo

University of Balearic Islands, Spain

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Green Seminar Room, D Floor

Department of Electrical, Computer and Biomedical Engineering

Abstract: In this seminar, we'll analyze the dichotomy between performance and energy efficiency in heterogeneous hardware environments (CPU/GPU). As machine learning tasks become more ubiquitous, a fundamental question arises: Is the GPU always the more efficient option? Through an empirical, benchmark-based evaluation, we'll explore how common algorithms like linear regression, matrix multiplication, and gradient boosting perform on different processing units. We'll debunk the notion that "faster is always better for sustainability," demonstrating that for light workloads, the CPU remains the more sustainable choice.

Biography: Dr. Belén Bermejo is an Associate Lecturer on Computer Science and member of the Systems Architecture and Performance research group at the University of the Balearic Islands (Spain). Since 2016, her research has focused on the energy consumption of virtualized servers and cloud data centers. In addition, she has recently extended her research to the environmental effects of surveillance capitalism. She has numerous publications in high-impact journals and book chapters and has participated as a committee in multiple international conferences. In addition, she is President of the Women in Engineering group of the IEEE Spain section and member of the IEEE Spain board. She has also carried out research stays at the University of Newcastle (United Kingdom), the University of Seville (Spain), and the University of Pavia (Italy). She has been part of numerous national, international, and European research projects throughout her career, being responsible for two cooperation projects with Latin America.

Organizer	**Ph.D. Coordinator**
Prof. M.C. Calzarossa	Prof. I. Cristiani

For more information: mcc@unipv.it