

SpeechPizza

Thursday, 12 October 2023

12:00 - 13:00, D011

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(Assoc. Prof. CTSYS team)

Title: Exploration and conception of computing architectures of type computing in-memory based on emerging non volatile memories

Abstract: New emerging Non-Volatile Memories (NVM) promise high density data storage and can easily integrate In-Memory Computing (IMC). IMC purposes is to compute where the data is or the closest to, to suppress back and forth data movements from the memory to the cores. Existing solutions use analog computing that has high efficiency but limited flexibility. When data needs to be written back after computation, endurance of NVM is often not discussed. We design a digital wrapper that extends memory functionality with vector computing capabilities and develop a simulation platform for architecture exploration. Our digital wrapper, aka C-SRAM, can be integrated with most memory technologies and comes with its own small SRAM buffer. We demonstrate that computing at the top of the memory hierarchy, i.e. close to the permanent storage, grants in average $17.4\times$ energy reduction and $12.9\times$ speed-up versus SIMD baseline. Thanks to SRAM buffer, NVM's endurance is not impaired and thereby extends system lifetime compared to other IMC solutions.

Vinisha Chaluvayalil vinisha.chaluvayalil@lcis.grenoble-inp.fr

(Postdoc ORSYS team, working with N. Barbot)

Title: Antenna and radome design antenna- radome interaction studies

Abstract: An antenna is an integral part of the wireless communication system, which is used for transmitting and receiving electromagnetic waves. Design, dimension and shape of the antenna greatly vary depending upon the application and frequency range used. In this presentation I will be briefly discussing about some of the antenna types I worked on such as various microstrip patch antenna, waveguide antenna arrays etc. Every antenna in the practical applications need a housing or protection covering for the assembly. These are called radomes (radar domes) and it has to act as electromagnetic windows. Ideally, radome should be carefully designed in such a way that it should not degrade the electromagnetic performance of the antennas. Modern airborne radomes have very stringent requirements. This discussion will briefly cover the graded dielectric radome design as well.

The science behind pizza!

