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UNIVERSITÀ DEGLI STUDI DI MODENA E REGGIO EMILIA

Dipartimento di Scienze Fisiche, Informatiche e Matematiche

SEMINAR

Adaptive on-device deep-learning for audio and visual sensors at the extremeedge

Dr. Manuele Rusci, PhD (KU Leuven)

Friday June 14th, 2024, 11AM (40m + Q&A)
Room M0.2, Ground Floor, M18 Math Building
via Campi 213/B

Abstract

Bringing intelligence inside battery-powered tiny sensors that populate the extreme-edge of the network is extremely challenging because of the severe computation, memory and power constraints of the system and its processing units. In the first part of the talk reviews the main quantization and hardware-software innovations that we adopted to port audio and visual deep inference tasks on low-power RISC-V microcontrollers. Then, It will challenge the widespread train-once-deploy-everywhere paradigm by describing our effort to bring customization capabilities on-device.

By taking an audio classification problem as a case-study, the talk will show our recent results to learn the deep learning sensor functions on our microcontroller-powered systems using data collected in the field to eventually gain a personalized smart audio sensor.

Short Bio

Dr. Manuele Rusci received the Ph.D. degree in electronic engineering from the University of Bologna in 2018. He is currently a Marie Curie post-doc fellow at KU Leuven. Before he was with GreenWaves Technologies and Università di Bologna. His research work focuses on edge machine learning on ultra-low power processors.

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