HW Accelerated Machine Learning at the Edge

ON-LINE CLASS by Microsoft TEAMS

April 25 - May 6, 2022

WEEK 1	**APRIL 25-29, 2022**
WEEK 2	**MAY 2-6, 2022**

DAILY	Central European Time **CET (Lausanne)**	Eastern Standard Time **EST (New York)**	Pacific Standard Time **PST (California)**	India Standard Time **IST (India)**
Lecture 1	4:00-5:30 pm	10:00-11:30 am	7:00-8:30 am	7:30-9:00 pm
Lecture 2	6:00-7:30 pm	12:00 am -1:30 pm	9:00-10:30 am	9:30-11:00 pm

WEEK 1	Lecture		
Monday, April 25	1	**Context:** ML Applications, Scenario's and Constraints for the Edge	Marian Verhelst, KU Leuven
	2	**Context:** ML Algorithms and Resulting Challenges	
Tuesday, April 26	1	**Algorithms:** Neural Network Compression for the Edge	Tijmen Blankevoort, Qualcomm
	2	**Algorithms:** Neural Network Quantization for the Edge	
Wednesday, April 27	1	**HW, CPU:** Specializing Processors for ML	Luca Benini, Uni Bolgna/ETHZ
	2	**HW, CPU:** From Single to Multi-Core Low-Power SoCs for ML	
Thursday,April 28	1	**HW, Digital:** Concepts Towards ML Acceleration	Marian Verhelst, KU Leuven
	2	**HW, Digital:** Exploiting Quantization and Sparsity at the HW Level	
Friday, April 29	1	**HW, Analog:** Analog/Mixed-Signal Acceleration	Naveen Verma, Princeton
	2	**HW, Tech:** Architectural Integration of Emerging Compute Models and Technologies	

WEEK 2	Lecture		
Monday, May 2	1	**Tools:** Model-centric TinyML	Vijay Janapa Reddi, Harvard
	2	**Tools:** Data-centric TinyML	
Tuesday, May 3	1	**Tools:** Landscape of DL Compilers and Challenges for Inference	Prasanth Chatarasi, IBM & Tushar Krisna, Georgia Tech
	2	**Tools:** Mapping and HW Co-optimization	
Wednesday, May 4	1	**System:** Efficient Execution of Approximated AI Algorithms on Heterogeneous Edge AI Systems	David Atienza, EPFL
	2	**Use Cases:** Application-Driven System Design and Optimization flow of Edge AI Use Cases in Industrial and Medical Domains	
Thursday, May 5	1	**Emerging ML Paradigms:** Neuro-Inspired Computing	Jan Rabaey UC Berkeley
	2	**Emerging ML Paradigms:** Towards Cognitive Systems	
Friday, May 6	1	**Practical Use Cases:** Energy Efficient ML Applications for Metaverse	Huichu Liu, Facebook
	2	Panel Discussion	Eduard Alarcon, UPC