A One Week Workshop on
VLSI based Approximate Computing for Image Processing
20 to 24 December 2021, Online Mode
Organized by IIITDM Kancheepuram, Chennai-600 127

Venue	Online Mode
Objective	Energy efficient designs are the need of the hour in this IoT era. IOT based solutions are gradually adopted in real life applications. The majority of the systems that are used IOT are signal processing with a miniaturization to fit into the small enclosure. Efficient VLSI architectures for signal processing are needed here, so the designer shall need to have an idea of designing a high-performance VLSI circuit that does all the required signal processing activities. The majority of the real-life signal processing does not require accurate processing where one needs to spend more battery power in computing and one can enhance the battery life if he/she can build the design using approximation which will not make any difference in the final output if it is computed by accurate or approximate. Approximate computing will reduce the required power consumption and enhance the speed.
Topics to be Covered	• Introduction to DSP Architectures; High Performance Circuit Design Concepts • High Performance VLSI Architectures for Signal Processing • Motivation for Approximate Computing • Approximate Computing Techniques and Performance Metrics • Approximate Computing Implementation Models and Evaluation • Practice – Modeling hardware using Verilog HDL • Approximate Computing for Image Processing Applications
Target Audience	Faculty/Scientists/Industry Persons/Researchers/M. Tech and B. Tech Students working in the area of VLSI architecture or hardware-based DSP and Image Processing.
Prerequisite	Participant should have the basic working knowledge of Digital Logic Design, Basics of Digital VLSI Design, and Fundamentals of DSP and Image Processing. Basic of MATLAB and Perl or Python.
Registration Details	Registration Link: https://docs.google.com/forms/d/e/1FAIpQLSeiaEP6PrRAKkJtd_Zj2mai9Usb4HPNiIRIvxrAXggQwcpT7A/viewform
Registration Fees	Faculty/Scientists/Industry or R&D Persons/Researchers/M. Tech/MCA/BCA/BSc and B. Tech Students – Rs. 1180/- (Inclusive of 18% GST on Rs. 1000/-)
Payment	NEFT or IMPS Account Details: **IIITDM Educational Events; Acc.No:35594334673; State Bank of India; Kandigai Branch; IFSC code: SBIN0018365**. **Please mail payment receipt to noor@iiitdm.ac.in, in order to Get Confirmation.**
Contact Info:	**Dr Noor Mahammad Sk & Dr Sreehari V (http://web.iiitdm.ac.in/noor/)** Workshop Organizing Chair & Program Chair Indian Institute of Information Technology, Design and Manufacturing (IIITDM) Kancheepuram Melakottaiyur, Vandalur - Kelambakkam Road, Chennai - 600 127, Tamil Nadu, India. For enquiry and clarification, please contact: Email: noor@iiitdm.ac.in; 044-2747 6349/ 91760 10587(M)

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in Centrally Funded Technical Institute under Ministry of Education.
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		Time (Hrs)	Topic	
DAY 1	20 DEC 2021	0930-1100	Introduction to DSP and VLSI Architectures for DSP	Dr NMM
		1115-1230	High Performance Circuit Design Concepts	Dr NMM
		1400-1530	Overview of Verilog HDL and Tools	Dr NMM
		1530-1700	Practice Session1: Hardware Modeling using Verilog HDL	Dr NMM
DAY 2	21 DEC 2021	0930-1100	Introduction to hardware for approximate Computing	Dr NMM
		1115-1230	Approximate Arithmetic Circuits: Adders	Dr Sreehari
		1400-1530	Practice Session2: Modeling Approximate Adders using Verilog HDL	Dr NMM
		1530-1700	Practice Session3: Image Processing using Approximate Hardware	Dr NMM
DAY 3	22 DEC 2021	0930-1100	Approximate arithmetic circuits: Compressors	Dr Sreehari
		1115-1230	Approximate and Accurate: Multiplier Design	Dr Sreehari
		1400-1530	Practice Session4: Modeling Multiplier using Verilog HDL	Dr NMM
		1530-1700	Practice Session5: Image Processing using Approximate Hardware	Dr NMM
DAY 4	23 DEC 2021	0930-1100	Software Development – Simulator Modeling	
		1115-1230	Approximate Multiplier and it's Error Analysis	Dr Sreehari
		1400-1530	Practice Session6: Mixed Precision Multiplier Design	Dr NMM
		1530-1700	Practice Session7: Advanced Approximate Computing Techniques	Dr NMM
DAY 5	24 DEC 2021	0930-1100	Approximate Hadamard Transform and other Transforms	Dr NMM
		1115-1230	Approximate DCT and DWT	Dr NMM
		1400-1530	Practice Session8: Modeling Approximate DCT using Verilog HDL	Dr NMM
		1530-1700	Practice Session9: Other Image Processing Techniques	Dr NMM

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