Workshop on Approximate Computing

Pittsburg, PA, USA
October 6, 2016

http://approximate.uni-paderborn.de

Preliminary Program

9:00 – 10:00 Opening and Keynote

Chair: Hans-Joachim Wunderlich, University of Stuttgart, Germany

Opening Remarks

Sybille Hellebrand, University of Paderborn, Germany

Keynote

Anand Raghunathan, Purdue University, USA

10:00 – 10:30 Coffee and Posters

Approximate Computing: Facing The Control Flow

M. Ammar Ben Khadra, Dominik Stoffel and Wolfgang Kunz

University of Kaiserslautern, Germany

Towards Approximate Computing Applications by Employing Mutation Code Approach

Mario Barbareschi[1,2], Domenico Amelino[1,2], Antonino Mazzeo[1,2] and Alberto Bosio[3]

[1]DIETI - University of Naples Federico II, Italy, [2]CeRICT scrl - Centro Regionale Information, Communication Technology, [3]LIRMM, France

The Gamma multiset rewriting paradigm: a parallel approximate computing framework

Gabriel Paillard[1], Rubens Almeida[2], Rui Mello Junior[2] and Felipe França[3]

[1]Federal University of Ceara (UFC), [2]Brazil, Brazilian Navy Research Institute (IPqM), Rio de Janeiro, [3]Brazil, Federal University of Rio de Janeiro (UFRJ), Brazil

Data Driven Optimizations for MTJ based Stochastic Computing

Ankit Mondal and Ankur Srivastava

University of Maryland, College Park, MD, USA

Weather and Climate Simulations with Approximate Computing

Stephen Jeffress, Tim Palmer and Peter Duben

University of Oxford, Department of Atmospheric Physics, UK

10:30 – 12:30 Session 1 – Multi-Level Design and Test

Chair: Jörg Henkel, KIT, Germany

Data Dependent Loop Approximation Technique in High-Level Synthesis

Seogoo Lee, Lizy K. John and Andreas Gerstlauer

The University of Texas at Austin, USA

Multi-Level Approximation for Inexact Accelerator Synthesis Under Voltage Island Constraints

Georgios Zervakis, Sotirios Xydis, Vasileios Tsoutsouras, Dimitrios Soudris and Kiamal Pekmestzi
School of Electrical and Computer Engineering, National Technical University of Athens, Greece

Hardware/Software Co-Characterization for Approximate Computing

Alexander Schöll, Claus Braun and Hans-Joachim Wunderlich
University of Stuttgart, Germany

A Case Study on the Approximate Test of Integrated Circuits

Imran Wali[1], Arnaud Virazel[1], Patrick Girard[1], Mario Barbareschi[2] and Alberto Bosio[1]
[1]LIRMM, France, [2]DIETI - University of Naples Federico II, Italy

12:30 – 14:00 Lunch

14:00 – 15:30 Session 2 - Near Memory Computing and Deep Learning

Chair: Marco Platzner, University of Paderborn, Germany

NAX: Near Data Approximate Computing

Amir Yazdanbakhsh[1], Choungki Song[2], Pejman Lotfi-Kamran[3], Hadi Esmaeilzadeh[1], Nam Sung Kim[4] and Jake Sacks[1]
[1]Georgia Institute of Technology, USA, [2]University of Wisconsin-Madison, USA, [3]Institute for Research in Fundamental Sciences (IPM), USA, [4]University of Illinois, Urbana-Champaign, USA

Approximate Computing in Deep Neural Networks

Hokchhay Tann, Soheil Hashemi, Iris Bahar and Sherief Reda
Brown University, USA

Using deep learning and imprecise computation for safety critical applications

Chi-Sheng Daniel Shih[1], Chang-Min Yang[1], Chun-Yo Lin[1], Pei-Kuei Tsung[2] and Roy Ju[2]
[1]Department of Computer Science and Information Engineering, National Taiwan University, [2]MediaTek Inc. Taiwan

15:30 – 16:00 Coffee

16:00 – 17:30 Session 3 - Applications

Chair: TBA

Trading sharpness with energy consumption in a lens autofocus application

Anca Molnos, Yves Durand and Nicolas Gonthier (Presenter: Christian Fabre)
Univ. Grenoble Alpes, Grenoble, France. CEA - LETI, MINATEC Campus, Grenoble, France

Numeric Function Approximation with Separate Accuracy Domains

Jochen Rust and Steffen Paul
Institute of Electrodynamics and Microelectronics (ITEM), University of Bremen, Germany

Using Approximate Computing in Scientific Codes

Michael Lass, Thomas D. Kühne and Christian Plessl
University of Paderborn, Germany