Introduction

My name is Van-Phu HA, currently is Ph.D. student at CAIRN team, INRIA, Bretagne Atlantique, France. This is a hub for summarizing the survey of Approximate Computing techniques for several levels (Algorithmic, Functional, Operator and Number Representation Approximation) and several layers in a Embedded System. It is also the place for dicussing and giving the directions of Approximate Computing in the context of many new technologies appeared. The main contributions of this hub is to summarize, classify and update state-of-the-art Approximate Computing methods in the world. Moreover, it is also a guideline for newcomers in this field.

Energy Consumption is one of the major issues for computing today, covered by all domain in computer science, from High Performance Computing to Embedded system. Particularly, in the forecoming era of Dark Silicon, the benefits from transistor scaling is diminished by the power limitation wall, the requirements for improving the computational performance to address many problem in BigData, Internet of Thing (IoT), Artifficial Intelligence (AI), High Performance Computing (HPC) are a must. Approximate Computing was defined quite a long time but is receiving the increased attention recently because it is one of the best solutions for energy efficiency. The major aim of Approximate Computing is to consider the trade-off of Accuracy-Cost to gain the efficiency.

The appearance of Approximate Computing starts the another thought of algorithm deployment without the "absolutely accuracy" because of inherent "imperfectly precision" of Application ...

The classification of Approximate Computing methods ...

First of all, Approximate Computing is received a lot of attention from both academics and industries recently, even though the definition and its appearance was in quite a long time ago.

Application Level

Software Level

Architecture Level

Circuit Level

Transistor Level

Word Length Optimization (WLO)

Multiple Word Length Optimization is considered as NP-hard

Good Conferences for Approximate

Computing

I list some of good Conferences and Journals for looking for up-to-date news, methodologies for Approximate Computing as bellows

Conferences

Conference name	Abbreviation	Rank	Deadline in 2019	Priority
Design, Automation and Test in Europe	DATE	B	9/9/2019	TOP
Design Automation Conference	DAC	A1+	20/11/2019	TOP
ACM International Symposium on Computer Architecture	ISCA	A1+	7/12/2019	
IEEE International Symposium on Circuits and Systems	ISCAS	A1	26/5/2019	TOP
IEEE/ACM International Conference on Computer-Aided Design	ICCAD	A1	1/4/2019	
International Symposium on Microarchitecture	MICRO	A1	20/9/2019	
European Signal Processing Conference	EUSIPCO	B1	18/2/2019	
Asia and South Pacific Design Automation Conference	ASP-DAC	A2	30/6/2019	TOP
IEEE International Symposium on Quality Electronic Design	ISQED	B1		
International Conference on Computer Design	ICCD	A2		
IEEE International Symposium on Modeling Analysis and Simulation of Computer and Telecommunication Systems	MASCOTS	A	26/4/2019	
International Symposium on Low Power Electronics and Design	ISLPED	A1		
International Conference on Field-Programmable Logic and Applications	FPL	A2	15/3/2019	
IEEE Symposium on Field-Programmable Custom Computing Machines	FCCM	A2		
International Conference on Hardware/Software Codesign and System Synthesis	CODES+ISSS	A2	7/6/2019	
International Conference on Parallel Architecture and Compilation Techniques	PACT	A2		

IEEE Computer Society Annual Symposium on VLSI	ISVLSI	B1		
International Conference on Compilers, Architectures, and Synthesis for Embedded Systems	CASES		7/6/2019	

Journals

IEEE Transactions on Circuits and Systems I (TCAS I)

IEEE Transactions on Circuits and Systems II (TCAS II)

IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (CADICS)