Rajendra Prasad Yadav
Satyasai Jagannath Nanda
Prashant Singh Rana
Meng-Hiot Lim   *Editors*

Proceedings of the International Conference on Paradigms of Computing, Communication and Data Sciences

PCCDS 2022

Springer

Chapter 42
Approximate Adder Circuits: A Comparative Analysis and Evaluation

Pooja Choudhary [ID]**, Lava Bhargava** [ID]**, and Virendra Singh** [ID]

1 Introduction

With significant increase in importance of IoT, Big Data, Artificial Intelligence and neural networks due to which huge data, complex computations and data acquisition is needed for these applications. Today's equipment, general purpose computers require energy efficient high performing integrated circuits (ICs). ASICs are in huge need to process large amounts of data with size getting smaller embedded with new technologies. Power consumption and time are main components of energy efficiency. To improve it, both components must be reduced. So the best among all to solve is approximate computing discussed by Han and Orshansky in [1].

It is a technique that enhances performance, reduces power consumption by reducing accuracy. Every time exact computation is not necessary for applications where human senses are in play it is appropriate to apply approximate computing as small errors are not easily recognized. Generally the two types of methods for enhancing speed, performance and efficiency are Voltage-Over Scaling (VOS) discussed in Hedge and Shanbhag [2] and second one is redesigning the circuit for inherent resilience applications presented in Liu et al. [3] and Mohapatra [4].

P. Choudhary (✉)
Department of Electronics and Communication Engineering, Malaviya National Institute of Technology, Jaipur 302017, Rajasthan, India
e-mail: 2018rec9049@mnit.ac.in

P. Choudhary · L. Bhargava
Department of Electronics and Communication Engineering, Swami Keshvanand Institute of Technology Management & Gramothan, Jaipur 302017, Rajasthan, India
e-mail: lavab@mnit.ac.in

V. Singh
Dept. of Electrical Engineering & Dept. of Computer Science & Engineering, Indian Institute of Technology, Bombay 400076, Rajasthan, India
e-mail: viren@ee.iitb.ac.in

519