



CECS

CENTER FOR EMBEDDED & CYBER-PHYSICAL SYSTEMS

A Survey of Techniques for Approximate Memory Management

Majid Shoushtari, Nikil Dutt

Center for Embedded and Cyber-Physical Systems

University of California, Irvine

Irvine, CA 92697-2620, USA

{anamakis, dutt}@uci.edu

CECS Technical Report 17-03

December 7, 2017

Abstract

Approximate computing is a type of computation that returns a possibly inaccurate (i.e., approximate) result for situations where an approximate result is acceptable. The argument is that relaxing the guarantee for accurate result would enhance the performance of the application or the energy efficiency of the system. The memory subsystem is typically a major performance and energy bottleneck of computing systems and therefore approximate memory management is a promising way of improving the system's energy efficiency and/or performance. In this technical report, we provide a classification of prior researches in this area based on a number of criteria and review major contributions in this domain.