

DINH DUY KHA
2019712308

Regularities Considered Harmful: Forcing Randomness to Memory Accesses to Reduce Row Buffer Conflicts for Multi-Core, Multi-Bank Systems

The proposed methodology in this paper is based on an observation that accessing pages in a random manner performs much better than same order or sequential. Upon this discovery, the authors propose a new memory allocator called M3 that introduces a memory container abstraction and enforce randomness of page allocation across multiple bank. Evaluations show that by using M3, performance can increase up to 85% for memory intensive applications.

This paper is able to identify the problem with regularities in memory access: Row buffer conflicts, which can lead to performance degradation. By applying a randomizing algorithm, cases where multiple cores access the same bank is reduced.

The concept of memory container forms a collection of distinct and non-overlapping pages. This increase parallelism in memory access.

In some cases, there is a degradation in performance. Moreover, only memory intensive applications were used for testing which does not reflect the allocator applicability for general purposes.