Operating System Design

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

This paper is about row-buffer conflict problem and M^3, operating system-based solution for this problem. Row-buffer conflict occurs when different page frames mapped to the same bank or when several cores access the bank simultaneously and leads significant performance degradation. M^3 dedicate multiple banks to a core as much as possible to maximize memory parallelism with devising memory container and reduce cases where multiple cores access the same bank at the same time by a randomizing memory allocation algorithm. With M^3, and by adding more solution for other memory problems, it can be used widely for performance.