Abstract

Energy consumption in caches depends on the number of enabled sets/ways/blocks. The optimal energy consumption is the case of one set/one way/one block enabled. This paper proposes an algorithm to map cache line to one block in fully associative cache by XORing the address with constant. Bit selection is applied to the result and the block accessed. Only one block is accessed in this mapping. The proposed model is simulated with SPEC2K benchmarks. The average memory access time is comparable with traditional fully associative cache with energy savings.

References

Energy Efficient Fully Associative Cache Model

- G. Rivera, C. W. Tseng, Data Transformations for Eliminating Conflict Misses, PLDI, 1998

Index Terms

Computer Science
Architecture

Keywords

Energy Consumption  Fully Associative Cache  Xor Logic