Goal: Fast Concurrent Read & Write

A. Memory efficient (e.g., 95% space utilized)
B. Fast concurrent reads
C. Fast concurrent writes (scale w/ # of cores)

Starting Point: Optimistic Cuckoo Hashing

MemC3 (NSDI '13): goals A and B, but NOT C

Algorithmic Optimizations (for Insert)

- Lock after discovering an empty slot
  - minimize critical sections
- Breadth-first search for an empty slot
  - fewer items displaced, enables prefetching
- Increase set-associativity
  - less random (more sequential) memory reads

Preliminary Results (2 GB hash table, ~134.2 M entries, 8 Byte keys and 8 Byte values)

Platform: Intel Haswell i7-4770 @ 3.4GHz, 4 cores (8 hyper-threaded cores), 16 GB DRAM, 8 MB L3-cache

Throughput vs. # of threads (load 0-0.95)