Evaluating the Tagged Up/Down Sorter Priority Queue

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Project Overview

- Evaluate midterm queue against state-of-the-art hardware queues
  - Huang, et. al., 2014 - "A scalable, high-performance customized priority queue"
  - Kumar, et. al., 2014 - "Hardware-software architecture for priority queue management in real-time and embedded systems"
  - Min-heap implementation as baseline
- Compare both performance and resource utilization in a hardware implementation
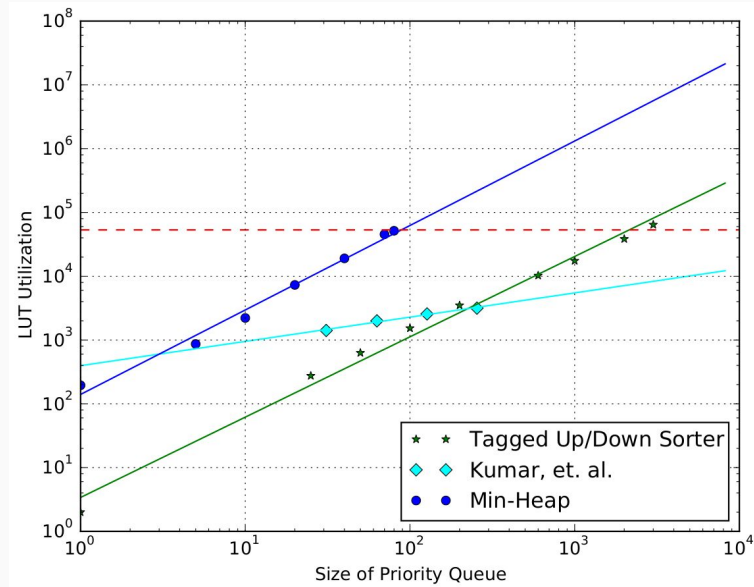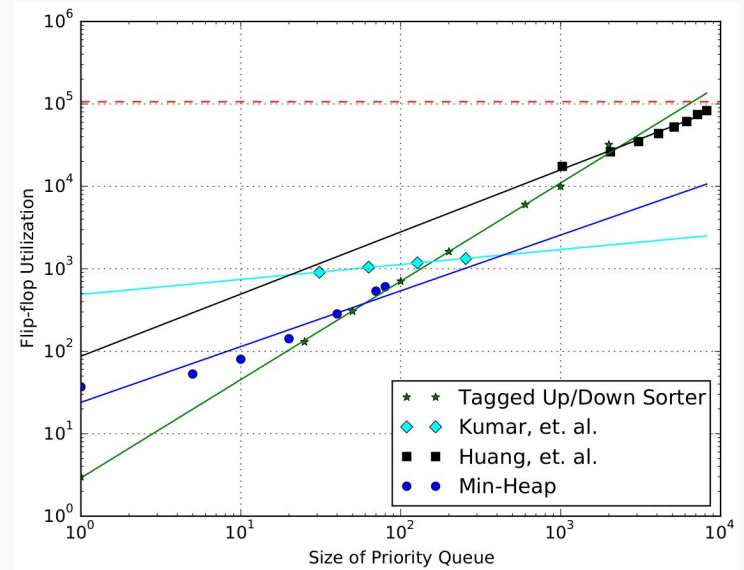
LUT Utilization

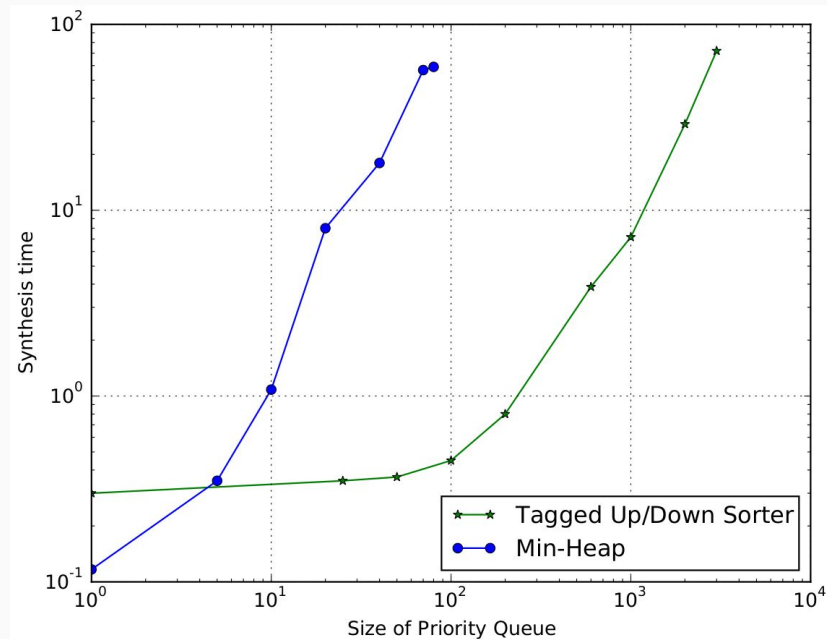Flip-flop Utilization

Queue	Execution Time	Operations
Midterm Queue	28,002 μs	140,000
Min-Heap	27799 μs	140,000

Performance Results

Synthesis Times

Conclusion

- Midterm queue is fast in hardware
- Midterm queue is not as scalable as state-of-the-art
- Need implementations of state-of-the-art for full evaluation