Metrics for Ranking the Performance of Supercomputers

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Title: Metrics for Ranking the Performance of Supercomputers.

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Abstract: We introduce a metric for evaluating the quality of any predictive ranking and use this metric to investigate methods for answering the question: How can we best rank a set of supercomputers based on their expected performance on a set of applications? On modern supercomputers, with their deep memory hierarchies, we find that rankings based on benchmarks measuring the latency of accesses to L1 cache and the bandwidth of accesses to main memory are significantly better than rankings based on peak flops. We show how to use a combination of application characteristics and machine attributes to compute improved workload-independent rankings.

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