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Distinguished Speaker Series

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A Reproducible, Verifiable Parallel Graph Analysis Benchmark

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Abstract

Good scientific experiments are done such that all their relevant conditions and parameters can be reproduced in a laboratory. Good scientific experiments are defined such that it can be determined unambiguously that the experiment has indeed been done according to specification. In short, good scientific experiments are reproducible and verifiable. The well-known parallel graph analysis benchmark SSCA2 does not constitute a good scientific experiment, because it fails in both respects. We need to fix that, because graph processing is becoming increasingly important in many areas of computing, and graph analysis benchmarks will be used in future procurements, as well as in problem suites used for system optimizations.

This presentation describes a simple method to accomplish that, while providing a computation and communication efficiency that is higher than that of existing implementations, especially with respect to the creation of the graph data structures. We will also briefly review how the new graph benchmark under development in the graph500 project is addressing these issues.

Bio

Rob is a senior software engineer in Intel's Software and Services Group. His main interest is parallel computing architecture, algorithms, and software. During his current tenure he has worked on Intel's 80- and 48-core research processors and a variety of exa-scale projects, among others. Before joining Intel 6 years ago, he worked at NASA Ames Research Center for a dozen years in parallel computing research, focusing on High Performance Computing applications, programming tools for clusters, and benchmarking.

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