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Computing@PNNL Seminar Series

Performance Advantages of a Data-Centric Computer Architecture



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10 AM ♦ ISB2 Wanapum Room (155)

Dr. Jacobsen has more than 35 years of experience building and leading highly technical organizations. Recently, he was CEO at GreenWave Systems Inc., a company created to address exascale challenges. Previously, he led all technical efforts at the Morse Project, creating smart devices for the Internet of Things. He also served as CEO of Foveal Recall Inc., which created specialized software tools for image object characterization and recognition. He has held the position as EVP of Informatics at Incyte Genomics, as well as VP of Applications at SGI. He earned his undergraduate degree from the California Institute of Technology and a Ph.D. from the University of California, Berkeley.

Evidence that traditional computer architectures do not handle applications well when the data are not cache-friendly, such as sparse matrix operations, data analytics, machine learning, and graph analysis, continues to grow. In part, this stems from memory access characteristics and, to a degree, how accesses to remote memory are handled for many-core machine implementations.

In his talk, Dr. Jacobsen will introduce a new, highly-scalable partitioned global address space (PGAS) architecture that can scale to very large sizes using a shared memory programming model that is relatively invisible to the programmer. In this architecture, the program thread migrates to the data, and data never move, which can result in dramatic performance improvements.

Host: Nathan Baker (nathan.baker@pnnl.gov), ACMD Division Director