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KEYNOTE 4: Scientific Applications on Heterogeneous Architectures – Data Analytics and the Intersection of HPC and Edge Computing

Tuesday, 3 December 2019 09:45 (45 minutes)

This talk discusses two emerging trends in computing (i.e., the convergence of data generation and analytics, and the emergence of edge computing) and how these trends can impact heterogeneous applications. Next-generation supercomputers, with their extremely heterogeneous resources and dramatically higher performance than current systems, will generate more data than we need or, even, can handle. At the same time, more and more data is generated at the “edge,” requiring computing and storage to move closer and closer to data sources. The coordination of data generation and analysis across the spectrum of heterogeneous systems including supercomputers, cloud computing, and edge computing adds additional layers of heterogeneity to applications’ workflows. More importantly, the coordination can neither rely on manual, centralized approaches as it is predominately done today in HPC nor exclusively be delegated to be just a problem for commercial Clouds. This talk presents case studies of heterogeneous applications in precision medicine and precision farming that expand scientist workflows beyond the supercomputing center and shed our reliance on large-scale simulations exclusively, for the sake of scientific discovery.

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