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Energy Efficient Computing with GPUs

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The past five years have seen the use of graphical processing units (GPUs) for computation grow from being of interest to a handful of early adopters to a mainstream technology used in the world's largest supercomputers. One of the attractions of the GPU architecture is the efficiency with which it can perform computations. Energy efficiency is a key concern in the design of all modern computing systems, from the lowest power mobile devices to the largest supercomputers; it will be paramount in the push to exascale computing. We discuss the Echelon project, and how the NVIDIA GPU architecture will evolve over the coming 5-10 years. Echelon is a DARPA-funded project investigating efficient parallel computer architectures for the Exascale era.

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