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Who can beat X86?

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The talk will provide detailed information on one of the most revolutionary platform for low power computing of recent years. The interest on power saving and maintaining a good time to solution performance is the open task of the current research on computing. Our solution based on ARM Cortex-A9 and GPU Nvidia Quadro can achieve 270 GFlops of peak performance single precision with a power consumption of 50 W. The real performances are demonstrated through a series of synthetics benchmarks and real applications. In detail, the first part will be mostly focused on pure hardware measurements for example, i). measures bandwidth of transferring data across the PCIe bus, ii). measures bandwidth of reading data back from a device, iii). measures bandwidth of memory accesses to various types of device, iv). measures maximum achievable floating point performance using a combination of auto-generated and hand coded kernels.

A second section will shows results from algorithms test, such as:

- FFT: forward and reverse 1D FFT.
- MD: computation of the Lennard-Jones potential from molecular dynamics
- Reduction: reduction operation on an array of single or double precision floating point values.
- SGEMM: matrix-matrix multiply.
- Scan: scan (also known as parallel prefix sum) on an array of single or double precision floating point values.
- Sort: sorts an array of key-value pairs using a radix sort algorithm
- Spmv: sparse matrix-vector multiplication

In the last part, some results obtained with standard applications will demonstrate both the performance and the compatibility of the codes on this new hardware platform.

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