

**NCODE**



# High Performance Computing with GPU

Services Brochure





## What is GPU Computing?

GPU computing or GPGPU is the use of a GPU (graphics processing unit) to do general purpose scientific and engineering computing.

The model for GPU computing is to use a CPU and GPU together in a heterogeneous co-processing computing model. The sequential part of the application runs on the CPU and the computationally intensive part is accelerated by the GPU. From the user's perspective, the application just runs faster because it is using the high-performance of the GPU to boost performance.

# How this technology and NCode may help you achieve your goals?

The GPU has evolved over the years to have teraflops of floating point performance. By using the GPU as a co-processor it's possible to achieve speed-ups on the most demanding applications.

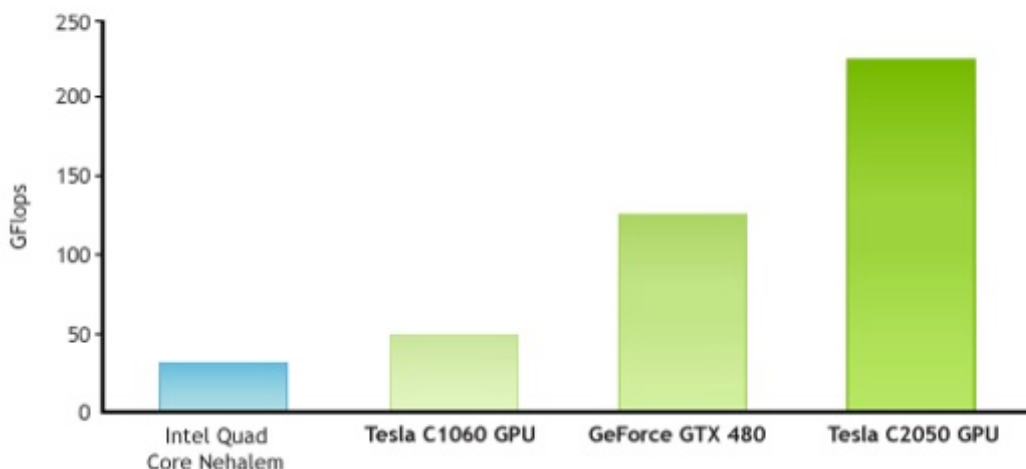
For many scientific tasks, modern graphics processors (GPUs) are 10 to 100 times faster than ordinary workstation processors (CPUs). Yet a high-end graphics card sells for less than \$500. How is this exceptional price/performance achieved? The key is massive parallelism: the GPU is designed to execute thousands of threads simultaneously.

At NCode we have the skills to leverage this performance to boost existing CPU driven applications and create new solutions for, virtually, any field where computers may be of use. If you need a supercomputer and want to keep your solution under budget, we can find and build a solution for your needs.

Following are some examples of the fields NCode can apply this technology for you:



N-Body, Double Precision,  $n=107,520$



Performance of N-body on x86 CPUs and different GPUs



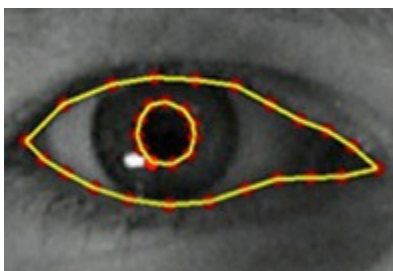
- Industrial Automation
- Process Control
- Quality Supervision



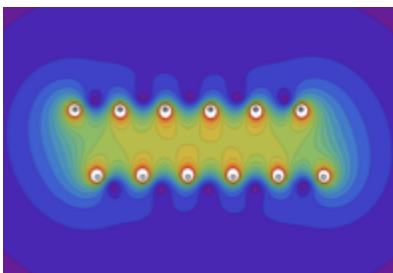
- Bio-Informatics and Life Sciences
- Medical Imaging
- Molecular Dynamics



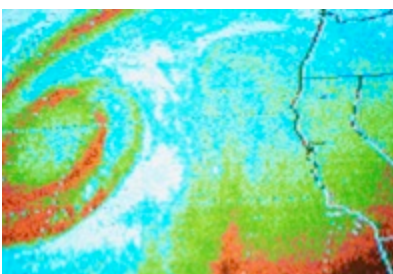
- Data Mining, Analytics, and Databases
- Numerical Analytics
- Computational Finance



- Imaging and Computer Vision
- Biometric Security



- Computational Structural Mechanics
- Computational Electromagnetic and Electrodynamics
- Computational Fluid Dynamics



- Electronic Design Automation
- Weather, Atmospheric, Ocean Modeling, and Space Sciences

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