Tengpeng Wei

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EDUCATION

Tsinghua University   Beijing, China

- **Master**   Computer Sci. & Tech.   GPA: 87/100 (top 20%)   Aug.2011 – Now (Expected Jul. 2014)
- **Bachelor**   Mathematics and Physics   GPA: 88/100 (top 20%)   Aug.2007 – Jul.2011

BASIC SKILLS

- Solid background of Mathematics, Physics and Computer Software/Hardware Architectures.
- Best on **C/C++** Language, with JAVA, Matlab, Python and Shell programming experience.
- Extensive experience of **CUDA (GPU)/pthread (multi-core CPU)/MPI (cluster)** parallel programming skills.

RESEARCH &PROJECTS

My research interests include: **Computational Geophysics** and **Parallel Algorithms**. I'm experienced at the parallel algorithms design on modern computer architectures like **GPU, many integrated core CPU** and **FPGA** processor to solve the computational challenge raised from exploration geophysical applications. Participated projects include:

- **Accelerating the Data Pre-Processing in Beam Migration on a CPU-GPU Hybrid Platform.** *[Sep.2012 – Apr.2013]*
Cooperative project with Statoil, targeted at developing an interactive fast subsurface imaging method by taking full advantage of computational capacity from CPU-GPU hybrid platforms. Optimization strategies like exploiting GPU kernels for computational-intensive portions and a pipeline design for overlapping I/O transferring was applied. A best system resource utilization and over 10x speedup over an original multi thread implementation was finally achieved.

- **A Parallel Finite-Element Solution of Transient Electromagnetic Diffusion Equation.** *[Mar.2012 – Oct.2012]*
Cooperative research topic with LBNL, aimed at developing a parallel algorithm for FETD-EM modeling problem. The biggest challenge is the parallelism of a large-scale irregular sparse matrix solver. Skills like graphic partition, multi-frontal parallelism pattern, incomplete Cholesky precondition and conjugate gradient solver was integrated for the specified FETD-EM sparse matrix problem solver. A considerable computational scalability was achieved.

- **Seismic Forward Modeling Methods Evaluation.** *[Jul.2012 – Aug. 2012]*
This is an internship project in Statoil, developing a general benchmark script to evaluate conventional and new developed forward modeling methods implementations, like ASG (from IWAVE), AWEFD, PSPI [Etgen, et al. 2009]and FFD[Song, et al. 2011](from Madagascar) etc., for their accuracy and computational performance.

- **Reverse Time Migration Implementations on GPU Platform.** *[Mar.2011 – Jun.2011]*
My bachelor final year project, accelerating reverse time migration method on GPU. The biggest computational challenge is the simulation of acoustic wave equation on a big 3D-mesh. Several algorithms like finite difference method which conduct to a stencil operator and pseudo-spectrum method which implicit FFT operator were accelerated and researched

INTERNSHIP EXPERIENCE

- **Seismic Imaging R&D**   Statoil (Beijing) Technology Service Co., Ltd.   Jul. 2012 – Aug.2012 & Aug.2013

SCHOLARSHIPS

- National Scholarship for Encouragement *[2009]*
- Sumitomo Corporation Scholarship   *[2010]*

EXTRA-CURRICULAR ACTIVITIES

- IEEE Tsinghua Student Branch Chair *[2011-2012]*
- Leader Guitar Player of two campus bands *[since 2010]*