Petros Apostolou

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EDUCATION

University of Pittsburgh | Swanson School of Engineering   (Expected graduation: 04/30/2020)

MSc Research in Mechanical Engineering – Department of Mechanical Engineering & Materials Science

Program Concentration: High Performance Computing (HPC) for Large-Scale Numerical Analysis Systems.

➢ MS Thesis: HPC Matrix-Free Linear Algebra Solver for Large-Scale Finite Element Analysis on GPUs. Achieved speed up of [82 x times] and scaled up to [217M x elements] on a 12GB Titan V in DP mode.

➢ MPI Project: Parallel CPU implementation for distributed memory parallelism of the heat equation using inter-node communication "SendRecv" MPICH MPI distribution on CRC cluster.

➢ CUDA Project: CUDA implementation for the acceleration of the vibrating membrane wave problem and the optimization of cuBLAS DGEMM for matrix-matrix multiplications on GTX1080 GPU.

PROFESSIONAL EXPERIENCE

Co-op program at ANSYS Mechanical (MAPDL) – Software Testing (HPC clusters)   (5/13/2019 - 12/13/2019)

➢ Objective: Used HPC scaling analysis to compute the performance and validate CPU and GPU implementations of ANSYS Mechanical HPC products.

➢ Cluster Management:

>>> Developed an automated parallel regression testing tool on Linux "Lustre" file system of the cluster, reducing the total execution time of 26K tests from 1 week to 6 hours.

PREVIOUS EDUCATION

National Technical University of Athens (NTUA) | School of Mechanical Engineering (Greece, 2015)

➢ BS Thesis: 3D Unstructured Mesh Displacement – Adaptation using Torsional Springs Technique.
➢ Description: Programmed a mesh adaptation method for mesh using unstructured tetrahedral meshes for use in aerodynamic-shape optimization and aeroelasticity. Parallel CFD & Optimization Unit.

COMPUTER SKILLS

➢ Programming: C/C++, CUDA (advanced), Fortran(familiar), Python(beginner)
➢ OS & Scripting: Linux UNIX SHELL/BASH (advanced), PERL (familiar), Win – Batch(familiar)
➢ Parallelization: MPI (advanced), CUDA-Stream/pthreads (familiar), OpenMP/ACC(familiar)
➢ Linear Algebra: CBLAS/CUBLAS, NVIDIA-AMGX, PETSC, FreeFem++, HPCG, ANSYS PCG/AMG
➢ Clusters/Cloud: UGE/SGE (advanced), SLURM(familiar), Microsoft Azure (beginner)

REFERENCES

Albert To, PhD (Master Thesis Advisor): albertto@pitt.edu
Roxana Cisloiu, PhD (ANSYS Inc – Canonsburg, Manager): roxana.cisloiu@ansys.com