Petros Apostolou

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Github: https://github.com/Petros89 • Personal Website

EDUCATION

University of Pittsburgh | Swanson School of Engineering   (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 Conjugate Gradient 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 Solvers on both Linux and Windows Clusters.
> ➢ Cluster Management:

>>> Developed an automated parallel regression testing tool <mapdlUGE.sh> on Linux "Lustre" file system of the CDC cluster, reducing the execution time of 26K tests from 1 week to 6 hours. The script is designed to be executed through ARM API and distributes parallel tests on the compute nodes of the cluster.

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. The
> code developed in Fortran90/95 at the Parallel CFD & Optimization Unit.

COMPUTER SKILLS

> ➢ Programming: C/C++, CUDA (advanced), Fortran(familiar), Python(beginner)
> ➢ OS & Scripting: Linux Shell/Bash (advanced), PERL (familiar), Windows Batch(familiar)
> ➢ Parallelization: MPI (familiar), OpenMP/ACC(familiar), CUDA-Stream/pthreads (beginner),
> ➢ Linear Algebra: CBLAS/CUBLAS, NVIDIA-AMGX, PETSC, FreeFem++, HPCG, ANSYS PCG/AMG
> ➢ Clusters - Schedulers: UGE/SGE (advanced), Slurm(familiar), Microsoft Azure Cloud (beginner)
> ➢ Version Control Systems: Git, Azure DevOps

REFERENCES

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