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SHAHZEB M. SIDDIQUI

HPC Software Engineer

SUMMARY OF QUALIFICATIONS

- Extensive experience working on HPC systems including **Clusters, Supercomputers and GPU systems.** I have first-hand experience with multiple XSEDE systems including **Bluewaters**, **Stampede**, and **Comet**, and **Shaheen** HPC systems.
- Adept in using **module environment** (lmod) to manipulate shell environment for dynamically loading packages in HPC systems.
- 8 years of C/C++ experience, 2 years JAVA experience, 1 year of Python experience
- 3 years of development experience in the **Linux environment (RHEL6, Ubuntu, Fedora)**
- Expertise in Algorithm Design, Performance Optimization, Scientific Computing, Parallel Computing, Hybrid Computing, and GPU Computing
- Hands on experience with **Git, Jenkins, Docker, AWS, Debuggers, Profilers, Compilers (Intel, PGI, GNU), MySQL**
- A well rounded programmer with **strong coding practices** and experience in a variety of applications
- An excellent **team player**, with the ability to **multitask** and **time management skills**

EMPLOYMENT

R&D Software Systems Engineer

Advanced Cyber-Infrastructure (ACI), Penn State University **05/2015-Present**
TEKsystems **10/2014-05/2015**

- Provide software support for up to 250+ software in science/engineering disciplines primarily for faculty and graduate students. Responsible for packaging the software into RPMs for deployment. Wrote lua files for each software package to be used with LMOD for dynamically loading software into the shell environment.
- Conducted QA on our software packages by writing test cases pertaining to the software using **ctest**
- On a daily basis, provide technical support to 4000+ users for Penn State High Performance clusters with software related issues including installation, executing jobs, application errors, troubleshooting job failures and runtime errors
- Principal Investigator (PI) for **Penn State CUDA Research Center 2015**: Responsible for conducting GPU research & provide training/education to users. Utilized XSEDE resources for hosting a training in parallel programming (MPI, OpenMP, OpenACC, hybrid programming). **NVIDIA donated a Kepler K40 GPU** for approving our proposal for CUDA Research Center
- Implement a python script using **nvidia-smi** tool to monitor GPUs on our system by generating a video on a daily basis using cronjob. Videos showed GPU utilization, temperature, and power along with a summary for any potential errors in hardware. Any hardware failure in GPU system will get reported to our ACI team. Videos were generated by stitching together series of timer-series images
- Maintain contact with software vendors for purchasing products, renewing licenses, and attended technical webinars related to high performance computing.

  Software Stack: GCC, PGI, Intel, DDT, Totalview, Avizo, Paraview, Matlab, Mathematica, Python, CUDA, OpenMPI, MPICH, MVAPICH, Boost, LAPACK, BLAS, CBLAS, ATLAS, SuiteSparse, FFTW, and many more

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Graduate Researcher **KAUST,** Thuwal, Saudi Arabia **01/2013 –12/2013**

- Presented at NVIDIA conference in KAUST for OpenACC Automatic Performance Tuning for Seismic Imaging Application. Site: **http://www.hpc.kaust.edu.sa/training/2013/GPU/**
- Adapted a CPU-based seismic imaging application to run on Kepler K20c GPU using the OpenACC programming model
- Developed scientific applications in a parallel environment using MPI/OpenMP library on the Blue Gene Supercomputer

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Graduate Researcher **IBM T.J Watson Center,** Yorktown Heights, NY **06/2013 – 08/2013**

- Designed an **Auction Algorithm** in C/C++ for solving the assignment problem in a Sparse Matrix with the objective of finding the maximum cardinality matching
- Involved in weekly code reviews with PM to discuss code design, results, and challenges
- Achieved 100% cardinality matching and 70% code reduction from existing application
- Successfully implemented a parallel implementation of the algorithm with extraordinary speedups on Blue Gene Q up to 128

cores for datasets ranging from 500k – 1M nodes in graph
- Created a technical document and presentation outlining my implementation of the **Auction Algorithm** with the intent of publication at a HPC conference

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System Analysts **NASA Goddard Space Flight Center - DRL,** Greenbelt, MD **02/2012 – 08/2012**
- Conducted regular system analysis to ensure optimal generation of our scientific data: products, diagnosed product machine, repaired misconfiguration in software, and identified environmental disruption
- Successfully released the DRL website which provided extra features for users that were nonexistent in previous website. **http://directreadout.sci.gsfc.nasa.gov**
- Performed an array of technical duties: assembled servers, customized system hardware, upgraded Operating System, and installed security patches
- Created a time-series visualization demo of our scientific data products on a world map using Grass 6.3 and we utilized shell scripting to automatically load the data files whenever new images were acquired from satellite

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Cyber Software Engineer **Northrop Grumman Corporation,** Annapolis Junction, MD **06/2011 – 12/2011**

Project: Cyber Defense Network
- Implemented a JAVA swing concurrent application to detect malicious network traffic using machine learning algorithms in WEKA

Project: Enterprise Mission Management
- Utilized graphical programming model to simulate data flow efficiency for Enterprise System in a small scale environment
- Evaluated a variety of commercial products (Apache Camel/Karaf, TIBCO, Enterprise Message System (EMS), Esper) across an array of criteria such as usability, cost, user capacity, scalability, effectiveness to determine their needs for large scale data management

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Database Programmer **Applied Research Lab,** PENN STATE UNIVERSITY PARK **05/2010 – 12/2010**
- Utilized MatrixOne Project Life-Cycle Management (PLM) to improve our existing database interface and restructuring data content on a corporate level
- Created a web application using TCL (Tool Command Language) script and Matrix Query Language (MQL) to provide a user friendly method to operate with database

EDUCATION

MS COMPUTER SCIENCE – High Performance Computing **08/2012-12/2013**
KING ABDULLAH UNIVERSITY OF SCIENCE & TECHNOLOGY (KAUST)
GPA: 3.54/4.0

BS COMPUTER ENGINEERING **08/2008-05/2011**
PENN STATE UNIVERSITY PARK
GPA: 3.52/4.0

COMPUTER SKILLS

Programming/APIs:	C, C#, C++, JAVA, Python, Ruby, LUA, HTML, CSS, PHP, ColdFusion, MPI, OpenMP, OpenACC, TCL, PAPI
Computer Systems:	Linux (Fedora, Ubuntu, Red Hat, Centos), Windows, Blue Gene Architecture
Application & Tools:	Notepad++, MS Visual Studios, Net-beans IDE, Wireshark, Metasploit, Dreamweaver, Shell-scripting, Apache
Networking	Wireless networking 802.11x, OSI Model, Ethernet, Network topologies
Miscellaneous	MySQL, Jenkins, Dockers, VMware