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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, 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**

- 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
- Provide software support for up to 250+ software from all science and engineering disciplines primarily for faculty and graduate students. Responsible for packaging our existing software stack onto our new cluster via RPMs.
- Conducted QA on our software packages by writing test cases pertaining to the software using **ctest**
- 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.

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, HTML, CSS, PHP, ColdFusion, MySQL, 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

AWARDS

- Student Volunteer in SAHPC 3rd Annual Conference (December 2nd, 2012)
- KAUST Discovery Scholarship - Masters Computer Science (2012-2013)
- Penn State University – Deans Lists (Fall 08, Spring 09, Fall 09, Spring 11)
- Certificate in 2009 Undergraduate Research & Scholarship Award from Penn State Lehigh Valley
- Certificate of Appreciation for tutors in Penn State Lehigh Valley 2009-2010

- 1st place prize in Computer Problem Solving Contest in Harrisburg Area Community College (2008)