Song Huang | Resume

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Software Engineer, Computer System Engineer, Data Scientist. A Ph.D. candidate of Computer Science and Engineering, working on the final year of the degree. Have deep understanding and strong skills on Software Development Life Cycle. Passionate about science, with strong technical and interpersonal skills to work in a team.

Education

- **University of North Texas** — **Denton, TX**
  Ph.D. in Computer Science and Engineering, GPA:4.0 — *2013 – present*
- **Texas A&M University-Commerce** — **Commerce, TX**
  Master in Computer Science, GPA:4.0 — *2011 – 2013*
- **Guangdong University of Technology** — **Guangzhou, China**
  Bachelor of Engineering in Network Engineering, — *2002 – 2006*

Technical Skills

- **Programming Languages: Proficient**: C/C++, Python; **Familiar**: Java
- **Software Development:** Object Oriented Design, Unified Modeling Language, Design Pattern, CMM-3.
- **Cloud and HPC Computing:** OpenStack, AWS, MiniNet, MPI, OpenMP, CUDA programming, Unix/Linux.
- **Data Science:** Hadoop Ecosystem, Spark with Python and Scala, R, Scikit Learn, TensorFlow.
- **Others:** MySQL, PostgreSQL, MongoDB, HBase, Cassandra, Qt, Wx Widgets.

Experience

- **Cisco Systems, Inc** — **Research Triangle Park, North Carolina**
  Research Intern — *June 2016 – August 2016*
  A responsible contributor for the failure analysis and prediction of Software-Defined Networking project.
  - Initialized the failure analysis and prediction project, and designed the project architecture.
  - Compared existing solutions for finding important entities in networks, and developed new model to quantify the criticality of network entities in OpenStack Network.
  - Developed algorithm to identify the impacted network entities result from failure in OpenStack environment.
- **Ultra-Scale Research Center, Los Alamos National Laboratory** — **Los Alamos, New Mexico**
  Research Student — *June 2015 – December 2015*
  A major contributor worked on improving power and energy efficiency on large-scale computer systems.
  - Configured power cap of processor's firmware dynamically and explored the characteristics of new generation CPU and Legion system (data-centric programming model) in terms of power and energy consumption.
  - Characterized the power and energy consumption and controlled program execution settings to reduce power and optimize energy consumption.
- **Guangdong Century Jiahua Trading Co., Ltd** — **Guangzhou, China**
  IT Team Lead — *July 2008 – December 2010*
  Led a team to develop and maintain the network and website publishing system.
  - Communicated with clients, specified the requirements, and designed the software architecture.
  - Dispatched tasks to software develpment team, coordinated the team to develop a website system.
  - Software unit testing, integrated testing, verification and deployment.
  - Established and maintained the physical network system, to support the website system.

- **Guangzhou TWO Information Technology Co., Ltd** — **Guangzhou, China**
  Software Developer — *July 2006 – July 2008*
  Developed Enterprise resource planning (ERP) software for construction management.
  - Requirement analysis. Communicated with the clients in Germany for the software requirements.
  - Software design, including the software high level design and low level design.
  - Software implementation, coding and documentation.
  - Software testing, including cross testing, unit testing and integrated testing.

University Employment

- **University of North Texas** — **Denton, TX**
  Teaching Assistant / Research Assistant — *August 2013 – now*
  Inspired and guided students on their C/C++ programming projects, taught C/C++ programming techniques, and mentored students to debug program and troubleshoot. Ongoing research projects includes:
  1. Disk failure analysis and prediction.
     - Use statistics and machine learning methods to model degradation process of disks and predict disk failiures.
     - My proactive method can predict the upcoming failures ahead of the actual failure less than 12 hours.
  2. Power efficiency on large-scale computer systems. Characterize and optimize power and energy on HPC servers and develop dynamical controls to reduce power and energy consumption by 13%.
     - Set the power caps of processors dynamically to reduce the power and energy consumption.
     - Controlled the program execution settings and profile the performance on power and energy consumption.
  3. OpenStack Network failure analysis. Improve the reliability of OpenStack by building fault injector to inject faults into Neutron and analyzing network failures and impacts.
- **Texas A&M University-Commerce** — **Commerce, TX**
  Graduate Assistant — *August 2011 – May 2013*
  Taught C/C++ programming and data structure and different development tools in the lab. Directed students to design algorithm for solutions to the problems, and to debug and troubleshoot the programs.

Publications

1. **Song Huang**, Zhiang Deng, Song Fu, "Quantifying Entity Criticality for Fault Impact Analysis and Dependability Enhancement in Software-Defined Networks ", *35th IEEE International Performance Computing and Communications Conference(IPCCC). Las Vegas, December 2016.*
2. **Song Huang**, Song Fu, Scott Pakin and Michael Lang, "Characterizing Power and Energy Efficiency of Legion Runtime and Applications: An Early Experience", *IEEE International Green and Sustainable Computing Conference (IGSC), November 2016.*
3. **Song Huang**, Song Fu, Quan Zhang, Weisong Shi, "Characterizing Disk Failures with Quantified Disk Degradation Signatures: An Early Experience", *in Proc. of IEEE International Symposium on Workload Characterization (IISWC), October 2015.*
4. **Song Huang**, Song Fu, Nathan DeBardeleben, Qiang Guan, and Chengzhong Xu, "Differentiated Failure Remediation with Action Selection for Resilient Computing", *in Proc. of the 21st IEEE/IFIP International Symposium on Dependable Computing (PRDC), November 2015.*
5. **Song Huang**, Michael Lang, Scott Pakin, and Song Fu, "Measurement and Characterization of Haswell Power and Energy Consumption", *in Proceedings of the 3rd International Workshop on Energy Efficient Supercomputing (E2SC '15), in conjunction of IEEE/ACM International Conference for High Performance Computing, Networking, Storage and Analysis (SC), November, 2015.*

Activities and Awards

Travel Grants for International Conference, ACM/IEEE SC 2015, ACM HPDC 2017	*2015, 2017*
College of Engineering Graduate Student Scholarship, University of North Texas	*2014-2015*
Graduate Assistantship Teaching Scholarship, University of North Texas	*2013-2014*
CyberQ Consulting Company: CMM-3 Completion Certificate	*2008*
Outstanding Student Scholarship, Guangdong University of Technology	*2002-2005*