

Song Huang | Ph.D. Candidate

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Software Engineer, Computer System Engineer. A Ph.D. candidate of Computer Science and Engineering, working on the final year of the degree. 8+ years' experience on software development, including 4+ years' enterprise-level software development. 4+ years' research on computer system scalability and reliability. Passionate about science, with strong technical and interpersonal skills to work in a team.

Education

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

Technical Skills

- **Programming Languages: Proficient:** C/C++, Python, Java, R Programming; **Familiar:** Scala, Javascript
- **Big Data and Machine Learning:** Hadoop Ecosystem, Spark, Scikit Learn, TensorFlow.
- **Data Analysis:** Qlikview, Qlik sense, Tableau, SPA.
- **Software Development:** Object Oriented Design, Design Pattern, CMM-3.
- **Cloud and HPC Computing:** AWS, OpenStack, MiniNet, MPI, OpenMP, CUDA programming, Unix/Linux.
- **Database:** MySQL, PostgreSQL, MongoDB, Cassandra, HBase.
- **Others:** Nodejs, Meteor, React, XML, Latex.

Work Experience

- **Summer Research Intern** **June 2016 – August 2016**
Cisco Systems, Inc **Research Triangle Park, North Carolina**
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.
 - Applied machine learning algorithms to developed models to quantify importance of network entities in OpenStack.
 - Developed algorithm to identify the impacted network entities result from failure in OpenStack.
- **Research Intern** **June 2015 – December 2015**
Ultra-Scale Research Center, Los Alamos National Laboratory **Los Alamos, New Mexico**
A major contributor for a project of improving power and energy efficiency on large-scale computer systems.
 - Characterized the power and energy characteristics of new generation CPU and Legion programming model.
 - Controlled power cap of processor dynamically on High Performance Computing (HPC) servers.
 - Configured program execution settings to reduce power and optimize energy consumption.
- **Teaching Assistant / Research Assistant** **August 2013 – now**
University of North Texas **Denton, TX**
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 big data analyzing tools to model degradation process of disks and predict disk failures.
 - My proactive method can predict the upcoming failures ahead of the actual failure less than 12 hours.
 2. Power efficiency on High Performance Computing (HPC) computer server.
 - Measure resource utilization, the power and energy consumption in process-level on HPC servers.
 - Developed dynamical controllers to reduce power and energy consumption by 13%.
 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.

- Graduate Assistant** **May 2011 – August 2013**
Texas A&M University-Commerce **Commerce, TX**

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.
- IT Team Lead** **July 2008 – December 2010**
Guangdong Century Jiahua Trading Co., Ltd **Guangzhou, China**

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 development 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.
- Software Developer** **July 2006 – July 2008**
Guangzhou TWO Information Technology Co., Ltd **Guangzhou, China**

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.

Selected 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 DeBardleben, 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

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