

## Huasong Shan

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CONTACT INFORMATION	4707 Tigerland Ave., Apt. 45 Baton Rouge, LA 70820	1-225-228-5446 <a href="mailto:monadynshy@outlook.com">monadynshy@outlook.com</a> <a href="https://monadyn.github.io/">https://monadyn.github.io/</a>
SUMMARY	I have more than 10 years experience in performance and security of large-scale web applications, cloud computing, data mining, database and telecommunication. My work philosophy is " <i>show me the code, show me the data, and show me the graph</i> ", put everything visible. Based-on this philosophy I have built tools for <a href="#">project management</a> , <a href="#">version control</a> and <a href="#">quality management</a> , <a href="#">log anomaly detection</a> , <a href="#">performance bottleneck detection</a> , <a href="#">intrusion detection</a> .	
EDUCATION	<b>Louisiana State University</b> , Baton Rouge, LA, US Ph.D., Computer Science, Dec 2017 <ul style="list-style-type: none"><li>Dissertation: <i>Very Short Intermittent DDoS Attacks on the Performance of Web Services in Clouds</i></li></ul> <b>Huazhong University of Science and Technology</b> , Wuhan, China M.S./B.S., Computer Science, Jun 2016/Jun 2003 <ul style="list-style-type: none"><li>Thesis: <i>Research of Mandatory Access Control for SDM<sub>4</sub> Object Features</i></li></ul>	
TECH SKILLS	<ul style="list-style-type: none"><li>Java, Python, C, Bash, Make, JavaScript, SQL</li><li>NumPy, Pandas, Trac, Django, Jenkins, Bitten, PhantomJS, d3.js</li><li>OpenStack, Docker, AWS SDKs &amp; CLI Tools, Azure, PackStack, Puppet</li><li>Hadoop, Kafka, SVM, Reinforcement Learning, Kalman Filter</li></ul>	
WORK EXPERIENCES	<b>Research Assistant</b> lsuCloud, Computer Science and Engineering Division, Louisiana State University <b>Research Assistant</b> Center for Computation and Technology, Louisiana State University <b>Staff Software Engineer</b> Infrastructure and System Department, Spreadtrum Communications, Inc. <b>Software Test Engineer</b> Shanghai Research Institute, ZTE	Aug 2015 to Dec 2017 Jan 2016 to Dec 2016 Jan 2008 to Aug 2015 Sept 2006 to Dec 2007
ACCOMPLISHMENT & AWARDS	Student Travel Grant <ul style="list-style-type: none"><li><a href="#">ACM CCS'17</a> Oct 2017</li></ul> Project Timely Awards — Spreadtrum Communications, Inc. <ul style="list-style-type: none"><li>for Data Mining System for Log Anomaly Detection Dec 2014</li><li>for <a href="#">Automated Build and Test Platform</a> as a certificate platform Dec 2011</li><li>for <a href="#">Capturing terminal real-time debugging info. in SD-Card</a> as a patent Oct 2008</li></ul>	
PROJECT EXPERIENCE	Performance Bottlenecks Diagnosis Platform in Distributed Systems 2015-2017 <ul style="list-style-type: none"><li><a href="#">Transform performance bottlenecks into visibility</a></li><li>Adapt monitor tools(e.g., OProfile, Collectl, WireShark, Logs of Apache and MySQL)</li></ul> Memory Contention Profiling and Performance Impact in Multi-tenant Clouds 2017 <ul style="list-style-type: none"><li>Profile memory contention and performance interference in Co-located VMs</li><li>Saturate memory bus and lock memory bus in modern CPU architecture</li></ul>	

- Performance Eval. and Predict for Long-tail Model in Distributed Systems 2016-2017
- Optimize model parameters using feedback control theory (e.g., Kalman filter) and machine learning (e.g., reinforcement learning)
  - Evaluate the model in simulations by modify Java modeling tools
- User Behavior Model Validation to Detect Bots 2015-2016
- Distinguish bots from legitimate users using machine learning (e.g., SVM)
  - Model user behaviors of navigating websites
- Capacity Prediction and Application Layer Anomaly Detection 2015-2016
- Detect anomaly on HTTP layer modifying Snort and Snort.AD
  - Profile the performance and capacity of target website in the wild
- Container-based Hybrid Cloud Orchestration 2016
- Manage resources in hybrid-clouds using AWS SDK (Boto3), Docker Swarm, Mesos
  - Automatically generate images of MPI applications using Dockerfile
- Data Mining System for Log Anomaly Detection 2014-2015
- Transform log anomaly into visibility
  - Crawl binary logs using Bugzilla RESTful API
  - Parse and clean binary log into XML format using C
  - Analysis log anomaly by regular match algorithm in time-line event
  - Visualize results with event flow graph using d3.js
  - Manage data using NoSQL database MongoDB
  - Implement standalone version using PyQT
  - Implement online version using JavaScript with WebSocket
- Data Mining System for Project Management 2013
- Transform engineers' work efficiency into visibility
  - Extract original data using Bugzilla RESTful API from bug tracking database
  - Filter data using NumPy/Pandas
  - Define new metrics to quantify requirements (e.g. speed of bug processing)
  - Visualize statistics results using d3.js
- Automated Parallel and Distributed Build and Test Platform 2009-2012
- Transform quality management and version control into visibility
  - Build simulation platform for the protocol software of mobile phones in Windows
  - Customized distributed build by modifying the code of Jenkins and Bitten
  - Distributed parallel test, achieving to finish tens of thousands test cases within 0.5h
  - Manage build and test clusters (hundreds of computers) using state machine pattern
- Real-time Capturing Terminal Debugging Information in Flash (SD-card) 2008
- Manage critical debugging information using circle buff
  - Optimize write efficiency of SIO in SD-card

#### PATENTS

1. **Huasong Shan** "Method and terminal device for capturing terminal debugging information in real-time manner". Appl. No. CN101945155 A, 2011.

#### SELECTED PUBLICATIONS

1. **Huasong Shan**, Qingyang Wang, and Calton Pu. "Tail Attacks on Web Applications" in Proc. of the 24th ACM Conference on Computer and Communications Security (CCS'17), Dallas, Texas, October 30-November 3, 2017. (top tier security conference)
2. **Huasong Shan**, Qingyang Wang, and Qiben Yan. "Very Short Intermittent DDoS Attacks in an Unsaturated System" in Proc. of the 13th EAI International Conference on Security and Privacy in Communication Networks (SecureComm'17), Niagara Falls, Canada, October 22-24, 2017.