

HUASONG SHAN

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SUMMARY

Industrial Experience: more than 10 years' experience at internet, IT and telecommunication industry, good command of various technologies which cover performance and security of large-scale web applications, cloud computing, data mining, database and telecommunication.

Academic Experience: strong publication records in computer science conference, e.g, CCS(top tier security conference).

EDUCATION

Louisiana State University, Baton Rouge, LA, USA

Ph.D. student in Computer Science, Graduate date: Dec. 2017

Thesis: Very Short Intermittent DDoS Attacks on the Performance of Web Services in Clouds

Research Area: Distributed System Security, Web Security, Cloud Security, DDoS Attacks

Huazhong University of Science and Technology, Wuhan, Hubei, China

M.S. in Computer Software Theory, June 2006

Thesis: Research of Mandatory Access Control for SDM4 Object Features

Research Area: Database Management System

B.S. in Computer Science and Technology, June 2003

COMPUTER SKILLS

Proficient Programming Language: Python/C/Shell/Make

Programming Language: Java/C++/Perl/SQL/Make/Javascript

Platforms: Linux/Windows/Threadx

Packages and frameworks: NumPy/Pandas/Trac/Flask/Django/Boost

PUBLICATIONS

1. **Huasong Shan**, Qingyang Wang, and Calton Pu, "[Tail Attacks on Web Applications](#)", to appear in Proc. of the *24th ACM Conference on Computer and Communications Security (CCS'17)*, Dallas, Texas, October 30-November 3, 2017. (Acceptance rate: 151/836=18%) (**Top 1 tier conference**)
2. **Huasong Shan**, Qingyang Wang, and Qiben Yan, "Very Short Intermittent DDoS Attacks in an Unsaturated System", to appear in Proc. of *13th EAI International Conference on Security and Privacy in Communication Networks (SecureComm'17)*, Niagara Falls, Canada, October 22-24, 2017. (Acceptance rate: 31/105=29.5%)
3. Jian Tao, Shuai Yuan, Du jin, **Huasong Shan**, Mona Wong and Q. Jim Chen, "Poster: COASTAL Modeling with SIMULOCEAN Science Gateway". in Proc. of *Practice and Experience in Advanced Research Computing (PEARC'17)*, New Orleans, LA, USA, July 5-6, 2017.
4. Jian Tao, **Huasong Shan**, Qingyang Wang, and Q. Jim Chen, "White Paper: [Type 2: Enabling Multidisciplinary Collaboration with Containerization Technologies](#)". in Proc. of the *1st US-Japan Workshop Enabling Global Collaborations in Big Data Research*, Atlanta, GA, USA, June 5-6, 2017. (co-located with IEEE **ICDCS'17**)
5. Jian Tao, Du Jin, **Huasong Shan**, Mona Wong, Andrea Zonca, and Q. Jim Chen, "Poster: [Management and Deployment of Scientific Applications with SIMULOCEAN Science Gateway](#)". in Proc. of the *11th Gateway Computing Environments Conference (Gateways'16)*, San Diego, California, USA, Nov 2-3, 2016.
6. Yuanzhen Wang, **Huasong Shan**, and Zhu Hong, "[Researches on Mandatory Access Control in ORDBMS](#)", *COMPUTER ENGINEERING AND APPLICATIONS*, Year 2006, Issue 9, Page 169-171,204

PATENTS

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

WORK EXPERIENCE

(1) **Company: Louisiana State University—as a Ph.D Candidate Aug. 2015 to Current**

KEY WORDS: CLOUD COMPUTING, PERFORMANCE BOTTLENECK, DISTRIBUTED SYSTEM SECURITY, WEB SECURITY, DDoS

Research Project: Internal Very Short Intermittent DDoS Attacks on Availability of Web Services in the Cloud 2017

- Profiling and quantifying resource contention in the co-located Virtual Machine
- Dynamically attack framework based on feedback control theory, targeting QoS violation
- Mitigate the resource contention attacks (fine-grained monitoring, co-relation detection, migrating potential culprit VMs)

Research Project: External Very Short Intermittent DDoS Attacks on Availability of Web Services in the Cloud 2015 to July 2017

- Pulsing DDoS attack, detection and defense via control theory like Kalman filter
- Performance and scalability analysis of large-scale web applications via time-series analysis approach
- Queue model and elastic resource provision in distributed system and cloud computing
- Automatically deploy n-tier web applications in Amazon EC2, Microsoft Azure and NSF Cloud, such as RUBBoS benchmark
- Automatically test, visualize, monitor the performance in cloud computing
- Event-driven and thread-based model by Apache and haboob

Implement Tool: Openstack (Nova, Neutron) /Collectl/Apache/Tomcat/MySQL/
/JavaModelTools/[Amazon EC2](#)/[Azure](#)/[NSFCloud](#)/[Phantomjs](#)/[Snort](#)/Snort.AD/[RUBBoS](#)/[JMeter](#)

Project: [SIMULOCEAN Science Gateway](#)

Jan. 2016 to Dec.2016

KEY WORDS: DOCKER, SWARM, Amazon ECS

My Responsibility:

- Container-based (Docker, Singularity) Virtual Cluster Managers in multi-cloud environments (Private Cloud, Amazon ECS, [Xsede](#))
- Generate Model images (Coastal Model: SWAN, Delft3D, etc.)
- Automatically deploy, adapt HPC tasks to computing resources in multi-cloud environments

Implement Tool: [Docker](#)(Docker Machine, Swarm, Compose)/MPI/python/Shell/[Mesos](#)/[Amazon ECS](#)

(2) **Company: Spreadtrum (Shanghai)—as a Staff Software Engineer 2008 to July.2015**

Project: [iLog](#) 2013 to July 2015

KEY WORDS: Bigdata, data mining

Short Description: iLog is a set of tools for the crawling, cleaning, processing, analyzing, crunching, visualizing data from the protocol logs. **I am as the project technical leader.**

My Responsibility:

- Crawl the log files from Bugzilla database
- The binary log files are parsed, cleaned and then saved in xml format for analyzing. It is written in c for a better performance.
- Analyze engine: it is the core of analyzing the line delimited file, which could scan all the readable file and seek the matched lines through regular expression.
- Integrate all the tools and visualize the analyzing result through the web or application program, I wrote both network version and stand-alone version.
- Collect data and statistics.

- Create a User Interface using D3 in order to help the user explore this data, the presentation of data allows the user to choose what they feel is important, and what will help them make decisions.
- Using D3 to generate images and interactive experiences, such as event flow, trend plot
- Using WebSocket to launch the local windows application from web through javascript
- Using MongoDB to store and query the analyze result

Implement Tool: C++/Python/Perl/PyQt/MongoDB

Project: [iBugzilla](#)

2012

KEY WORDS: Bigdata, data mining

Short Description: iBugzilla is a web application of data mining from Bugzilla Database. **I am as the project technical leader.**

My Responsibility:

- Bugzilla could support customizing the fields, but in the history of every bugs there are so many useful information for the trace of bug-fix, such as the bug-fix duration, the count of changing the owner, and something like that. iBugzilla could extract these useful information, do some statistics and visualize through kinds of plot, which is valuable for the managers in my corporation.

Implement Tool: Python/ Bugzilla/NumPy/Pandas/javascript/jquery/d3.js/Highcharts

Project: iBuild and iTest

2011

KEY WORDS: TDD, Agile development platform

Short Description: iBuild and iTest is the web application for project's auto build and regression test, which is useful for controlling the version's quality and verifying the bug-fix. **I am as the only core technical developer.**

My Responsibility:

- iBuild is a project like [Bitten](#), however, I have extended it for the continuous integration of c project and added some new feature, such as scheduling many copies of repository with different user at the same time which increases the throughput of building, and so many customized things
- iTest is the correlative project of iBuild. It is a distributed system, which schedules all the test tasks from iBuild, distributes them to the test agents, and manages all the test resource from lots of test agents like computers or mobile phone.

Implement Tool: Python/ MySQL/Apache/Trac/twisted.

Project: Integration Test Platform

2009 to 2010

KEY WORDS: Test framework, Infrastructure

Short Description: It's a platform for developing scripts for the testing of telecommunicate protocol software which is implemented in C. Through the platform, the script language can connect with the compiled language It can be efficient and helpful of simulating some telecommunicate case to test the protocol software. **I am as the core technical developer.**

My Responsibility:

- Clean and Collect the Target information from the protocol software and create the test database.
- Wrote C++ code extension for Tcl/Python/Perl like [SWIG](#). This helps connect the protocol software with the script languages. It enables us to power on/off the mobile phone, inject messages into the phone's tasks, trace and trap some signals from the phone, call the target function, monitor and control the variable of the protocol software.

Implement Tool: C/C++/Tcl-tk/ Python /Perl.

Project: Infrastructure Module of Protocol Software **as a team member**

2008 to 2015

KEY WORDS: Infrastructure, OS, Telecommunication

Short Description: the infrastructure module is the base of the protocol software in mobile phone. It handles thread management/thread communication/timer management/memory management/trace monitor module in real time system

My Responsibility:

- Maintain the infrastructure module and fix some bugs, such as cutting memory, classifying trace, refactoring code, supplying special data structure like bit array
- Design and implement one new feature: dynamically capture the real-time log info of protocol software in SD-Card. This automate the log capturing work that had been done manually.
- Packing and unpacking different type of trace, using circle buff to manage the trace input and output.

Implement Tool: C/Threadx

(3) Company: ZTE (Shanghai)—as a Software Test Engineer Sep.2006 to 2007

KEY WORDS: Telecommunication, Field Test

My Responsibility:

- be responsible for system test, such as Radio Resource Management
- 2007.4-2007.7 Doing 3G network field system performance test for Reliance Corporation in Mumbai, India, such as handover/radio resource management/congest management