LT 2015: The Fourth International Workshop on Large-Scale Testing

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ABSTRACT

Many large-scale software systems (e.g., e-commerce websites, telecommunication infrastructures and enterprise systems, etc.) must service hundreds, thousands or even millions of concurrent requests. Large-scale testing includes all different objectives and strategies of testing large-scale software systems using load. Large-scale testing is a challenging area and industry has invested large amount of resources into this. Yet, there are few academic research efforts devoted to large-scale testing. In this workshop, we intend to bring together industrial practitioners and researchers to establish and grow an academic research community around this important and practical research topic.

Categories and Subject Descriptors

C.4 [**Performance of Systems**]: measurement techniques, modeling techniques; D.2.8 [**Software Engineering**]: Metrics—*performance measures*; D.2.5 [**Software Engineering**]: Testing and Debugging

General Terms

Performance; Measurement; Verification

Keywords

large-scale testing; performance; reliability; scalability; dependability; software performance engineering; application performance management

1. INTRODUCTION

Large-scale software systems must service thousands (e.g., enterprise applications) or even millions (e.g., e-commerce websites like Amazon) of concurrent users every day. Many field problems of these systems are due to their inability to scale to field workloads, rather than feature bugs. In addition to conventional functional testing (e.g., unit and integration testing), these systems must be tested with large volumes of concurrent requests (called the *load*) to ensure the quality of these systems. Large-scale testing includes all different objectives and strategies of testing large-scale software systems using load. Examples of large-scale testing include live upgrade testing, load testing, high availability testing, operational profile testing, performance testing, reliability testing, stability testing and stress testing.

Large-scale testing is a difficult task requiring a great understanding of the system under test [8]. Practitioners face many challenges such as tooling (choosing and implementing the testing tools), environments (software and hardware setup) and time (limited time to design, test, and analyze). Yet, little research is done in the software engineering domain concerning this topic. Industry has been focused primarily on creating tools to automatically drive specified load into the system under test (e.g., LoadRunner [6] and Apache JMeter [2]). Large-scale testing is gaining more importance, as an increasing number of systems (on-premise and/or cloud-based systems) are designed to serve thousands or millions of users.

2. SCOPE

LT 2015 [4] includes the following two tracks of submissions: **technical papers** (maximum 4 pages) and **extended abstracts** for industry talks (maximum 700 words). The technical papers follow the standard ACM SIG proceedings format [1] and are submitted through EasyChair. Topics of interest include, but not limited to the following:

- Efficient and cost-effective test executions
- Rapid and scalable analysis of the test results
- Case studies and experience reports on large-scale testing
- Large-scale testing on emerging systems (e.g., adaptive/autonomic systems or cloud services)
- Taxonomies of testing large-scale software systems
- Large-scale testing in the context of agile software development process
- Using performance models to support large-scale testing
- Building and maintaining large-scale testing as a service
- Efficient test data management for large-scale testing

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3. WORKSHOP OBJECTIVES

LT 2015 intends to bring together researchers, practitioners and tool developers to discuss the challenges and opportunities of conducting research on large-scale testing.

4. WORKSHOP PROGRAM FORMAT

LT 2015 is a one-day workshop. The workshop participants consist of a mixture of academic and industrial researchers. A big emphasis of this workshop is to make the workshop interactive with many discussion slots assigned throughout the schedule.

The workshop has two keynote talks:

- **"Load Testing Elasticity and Performance Isolation in Shared Execution Environments"** by Professor Samuel Kounev from University of Würzburg;
- **"Challenges, Benefits and Best Practices of Performance Focused DevOps"** by Wolfgang Gottesheim from Compuware.

In addition, it also includes presentations from technical papers and industrial talks. Finally, there is a panel, which brings together industrial practitioners and academic researchers to discuss the opportunities and challenges associated with large-scale testing.

5. CONCLUSIONS

Large-scale testing is a required testing procedure to ensure the performance and scalability of the software systems, which are used by thousands or millions of users simultaneously. LT 2015 provides a forum for software engineering researchers and practitioners to discuss the challenges and opportunities of large-scale testing.

6. WORKSHOP ORGANIZERS

Zhen Ming (Jack) Jiang [3] is an Assistant Professor at the Department of Electrical Engineering and Computer Science, York University, Canada. Prior to joining York, he worked at BlackBerry's Performance Engineering Team for over half a decade. His research interests lie within Software Engineering and Computer Systems, with special interests in software performance engineering, mining software repositories, source code analysis, software architectural recovery, software visualizations and debugging and monitoring of distributed systems. Some of the tools resulted from his research are already adopted and used in practice on a daily basis to monitor and debug the health of several large-scale commercial software systems. He is the co-founder and co-organizer of the annually held International Workshop on Large-Scale Testing (LT), formally called International Workshop on Load Testing Large-Scale Software Systems. He is the recipient of several best paper awards including ICSE 2013, WCRE 2011 and MSR 2009 (challenge track). He received his PhD from the School of Computing at the Queen's University. He received his MMath and BMath degrees in Computer Science from the University of Waterloo.

Andreas Brunnert leads the Performance & Virtualization team [5] at fortiss GmbH, Germany. The team focuses on all aspects required to ensure that given performance goals (i.e., response time, throughput and resource utilization) for application systems are met. One of the focus areas of the team is the integration of software performance engineering (SPE) and application performance management (APM) activities throughout the whole life cycle of an application system [7]. Prior to joining fortiss, he worked as Software Engineer and Advisory IT Specialst in the WebSphere Application Server and Portal Server development and lab services teams at IBM Germany Research & Development GmbH. He received his M.Sc. degree in Information Systems from the University of Bamberg and a diploma in Computer Science from the University of Applied Sciences Brandenburg.

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7. REFERENCES

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