InSTA 2015 Opening

InSTA 2015
(International workshop on Software Test Architecture)
Graz, Austria 2015/4/13 (Mon)
Nishi, Yasuharu
The University of Electro-Communications, Japan
Welcome to InSTA 2015!

• **InSTA is a newcomer to ICST**
  - InSTA is “International Workshop on Software Test Architecture”
  - InSTA 2015 is the 2nd InSTA
    » 1st InSTA was in conjunction with ISSRE 2011
  - 11 papers are submitted and 6 papers are accepted (54.5%)
  - Program consists of 1 Excellent keynote, 6 papers and 1 discussion
    » Workshop dinner is being prepared!
  - Next InSTA will be held in conjunction with Next ICST in Chicago

• **Research on Test Architecture is undeveloped area**
  - Test technologies for large-scale and complicated systems
  - Big picture, holistic, higher-level abstraction can be key concepts
    » Definition of Test Architecture has been yet ambiguous
  - Practical research area for industry
    and good for collaboration between industry and academia
    » It’s a gold mine for researchers! 😊
  - We attendees should explore possible research themes in this InSTA
Organization of InSTA 2015

- **General Chair:**
  - Yasuharu Nishi, The University of Electro-Communications, Tokyo, Japan
- **Program Co-Chair:**
  - Satoshi Masuda, IBM Research - Tokyo, Japan
  - Satomi Yoshizawa, NEC, Japan
- **Program Committee:**
  - Paul Baker, Visa Europe, UK
  - Dato' Dr Aziz Deraman, Universiti Malaysia Terengganu, Malaysia
  - Sigrid Eldh, Ericsson, Sweden
  - Jon Hagar, Grand Software Testing, USA
  - Tetsuro Katayama, University of Miyazaki, Japan
  - Qin Liu, Tongji University, China
  - John D. McGregor, Clemson University, USA
  - Benjamin Romberg, Hewlett-Packard, Australia
  - Vipul Shah, Tata Consultancy Service, India
  - Masakazu Takahashi, Yamaguchi University, Japan
  - Kazuhiko Tsuda, Tsukuba University, Japan
  - Hironori Washizaki, Waseda University, Japan
  - Peter Zimmerer, Siemens, Germany

3 from Europe
2 from USA
4 from Asia/Pacific
7 from Japan
Test Architecture

- Test has several tasks and correspondent deliverable
  - TRA, TD, TI, TE
- Test engineers have to consider architecture of each task (test system) and deliverable (test suite)
  - Ex. of test system architecture is architecture of automated test execution
  - Ex. of test suite architecture is architecture of test levels and types
Example model of test architecture

Example of test system architecture

Example of test suite architecture
Candidate research themes for InSTA from CfP

• Concepts of test architectures
  – Abstraction of test cases (e.g. test levels, test types, abstract equivalent classes, high-level test conditions and high-level test cases)
  – Relationships of abstract test cases
  – Separation of concerns for test
  – Architecture of test suite based on abstract test cases (e.g. design of test levels and test types)
  – Types of test architecture (e.g. architecture of test suite and architecture of test system/environment)
  – Similarities, differences and harmonization between test suite architecture and test system architecture
  – Similarities and differences among test architecture, test strategy, test plan and test sub-process in 29119

• Design of test architecture
  – How to design several test levels
  – How to design complicated test types and test cycles
  – Design concepts for test architecture design
  – Modeling technique for test architecture design
  – Design patterns for test architecture design
  – Styles of test architecture
  – Quality characteristics of test architecture (e.g. maintainability of test suite)
  – Original diagrams and notation for test architecture design
  – Application or enhancement of existing notation (e.g. UML/UTP, SysML and future diagram for SPL)
  – Connection of test architecture design and test case design (e.g. structure of test case based on test architectural components)
  – Meta-models or ontology for test architectures
Candidate research themes for InSTA from CfP

- **Test requirement analysis**
  - Whether software requirement specification is the goal of software test or not?
  - How to model holistic test requirement
  - How to model non-functional requirement for test
  - How to organize test requirement for several source (e.g. from customer, from design and from environment)
  - How to overview large-scale and complex requirements for test
  - Analysis patterns for test requirement analysis

- **Application of test architecture**
  - Product line engineering of test suite (e.g. how to design and manage variants of test suite)
  - Design example of test architecture for large-scale and complicated system
  - Roles and responsibilities of test architect
  - Automation based on test architecture (e.g. separating automated test and manual test in keyword driven testing based on test architecture)
  - Test process improvement based on test architecture
  - Relationships between software architectures and software test architectures
  - Typical test architecture for a domain and/or comparison among domains (e.g. banking, logistics, cloud, automotive, medical, industrial automation and telecommunications)
  - Industrial experiments and case studies of test architectures
Presentations for InSTA 2015

• Presentations for InSTA 2015
  1. Excellent keynote
     » Sigrid Eldh, Ericsson, Sweden
  2. Mining process models and architectural components from test cases
     » Vipul Shah et al
  3. Design principles in Test Suite Architecture
     » Yasuharu Nishi
     » Keiji Uetsuki et al
  5. Semantic Analysis Technique of Logics Retrieval for Software Testing from Specification Documents
     » Satoshi Masuda et al
  6. Test Driven Development for Device Drivers and Rapid Hardware Prototyping
     » Dominic Eschweiler et al
  7. A Study on Implementation Approach for Analyzing Test Basis Using I/O Test Data Patterns
     » Tsuyoshi Yumoto et al,
I’m trying to place papers on tasks or deliverables...

1?

Test Requirement Analysis

7
Test Requirement Model

5
Test Design Model
(Test cases etc.)

3
Test Design Model
(Test cases etc.)

4
Test Implementation Model
(Test scripts etc.)

2
Test Implementation Model
(Test scripts etc.)

6
Test Execution

Execution Result

Software Testing

© NISHI, Yasuharu
Thank you for coming to InSTA and let’s discuss the new research area!

InSTA organizing team