1st IZTECH Workshop on Dependability

May 11th, 2015, Urla - İZMİR

Outline – Timetable

10:00 Opening Remarks (Halis Püskülcü, Tuğkan Tuğlular, Iztech)

Session I

10:15 Scope of the Workshop – Theory for the Practice (Fevzi Belli, Iztech)

10:45 Reset Words of Finite Automata, Heuristics, and the Cerny (Hüsnü Yenigün, Sabancı Üniversitesi)

11:30 Formalizing Cause-Effect Graph Testing (Tolga Ayav, Iztech)

12:00 Lunch Break

Session II

13:30 Success Stories of Industry-Academia Collaborations in Software Engineering: Experience from Canada and Turkey (Vahid Garoussi, Hacettepe Üniversitesi)

14:15 Dependable Networks (Murat Erten, İnnova)

14:45 Contract-based GUI Testing (Tugkan Tuglular, Iztech)

15:15 Break

Session III

15:30 Software Quality Management at Logo (Ersin Gülaçtı, Logo)

15:50 Online Field Test Tracking System (Yıldıray Başkurt, Vestel)

16:10 Panel : "Why Theories Fail in the Practice?" (Moderator: Emrah Tomur, Atmosfer TTO)

      (Panelists: Savaş Yürekli, Accenture; Oğuz Göven, Cybersoft; Alpay Karagöz, Proven)

17:00 Workshop Summary and Closing Remarks (Tolga Ayav, Iztech)

Organization Committee

Tolga Ayav, Fevzi Belli, Tugkan Tuglular

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Institute for Dependability and Reuse**

Abstracts

Reset Words of Finite Automata, Heuristics, and the Cerny (Hüsnü Yenigün, Sabancı Üniversitesi)

In this presentation, reset word problem will be introduced and it will be shown that finding a shortest reset word is hard. Existing heuristics for computing short reset sequences will be explained. Afterwards, the Cerny conjecture, which is arguably the longest standing open problem in combinatorial automata theory, will be presented along with current state of the literature about it.

Formalizing Cause-Effect Graph Testing (Tolga Ayav, Iztech)

Cause-Effect Graph Testing is a popular technique used for almost four decades. Based on Boolean Algebra, this technique assists deriving test cases from a given specification informally written in a natural language. We suggest Boolean Differentiation for formalizing the test case generation from Cause-Effect Graphs. The technique relies on Modified Condition/Decision Coverage (MCDC) analysis. The formal aspects of the technique may provide a basis for further mathematical analyses to produce a test suite with a less number of test cases and higher fault coverage.

Success Stories of Industry-Academia Collaborations in Software Engineering: Experience from Canada and Turkey (Vahid Garoussi, Hacettepe Üniversitesi)

The speaker is a firm believer in the utmost importance of active industry-academia collaborations in software engineering research to ensure relevance and usefulness of research results. During his career, the speaker has been active in initiating a number of R&D software testing and software engineering projects in Canada and Turkey. The speaker will present success stories of industry-academia collaborations in those projects, based on his experience from several projects in Canada and Turkey. The talk will also include proven collaboration models and success criteria. The talk will end by interactive brainstorming with the audience about industry-academia collaborations in software engineering.

Dependable Networks (Murat Erten, İnnova)

Today communication over computer networks has become an inseparable part of both our social and professional lives. It is very important that this communication is continuous and secure. Our intention for secure communication is to have the data in transmit is unreadable and unchangeable by others. Another important problem of communication networks, other than security, is physical or virtual breaking of connections. Survivable network term is used for networks designed to continue functioning in such cases.

When designing survivable networks, features like rooting protocols or survivable/secure communication protocols are targeted. Similarly, propositions and designs vary depending on the networks being wired or wireless. In wireless networks, different criteria may be proposed for ad-hock networks, sensor networks and fixed networks. In this study, some definitions will be given for wired and wireless survivable networks, and approaches tailored for sustaining these traits in different networks will be summarized.

Contract-based GUI Testing (Tugkan Tuglular, Iztech)

User inputs are critical for the dependability of information systems. User interactions can be modeled by Event Sequence Graphs. Event Sequence Graphs can be augmented with decision tables, which are used to represent contracts for user inputs. This compact modeling of input specifications can be used to generate test cases. This approach will be presented with an example.

Software Quality Management at Logo (Ersin Gülaçtı, Logo)

Logo Software, leads second in the Turkish Enterprise Application Software market with 23.2% share following the global competitor. Logo Software products are used by 1.3 million licensed users in 170.000 companies operating in tens of different sectors. In order to increase quality even further and to have a comparable infrastructure with international competitors, Logo Software has established Software Quality Assurance department. In this presentation the ongoing studies, methods and tools used by Logo for software quality are demonstrated.

Online Field Test Tracking System (Yıldıray Başkurt, Vestel)

Products at Vestel are subjected to field test process for a period of 3 to 6 months before start-up of serial production. Products are given to real clients in various regions in the country, their performances under real conditions are examined and necessary actions are taken before serial production. For this reason, continuous follow-up of field test products are highly important.

The online field test tracking system developed by Vestel, is made of a GSM modem card that acquires data from the refrigerator card and a software running on a WEB server. Owing to this system, both the temperature values measured by the product and the working conditions of components have become traceable from the headquarters. There is an alarm system notifying via e-mail or SMS in case the defined conditions on the system are out of range. On top of that, 1 km diameter location of products can be seen via a GSM network. System data are acquired directly from the microcontrollers on the refrigerator card, so that there is no need of usage of extra sensors. Accordingly, software of the refrigerator at the field test process can be checked to see if it is running correctly.