Editorial

Varun Gupta*

Department of CSE,
National Institute of Technology,
Hamirpur (HP), Pin:177005, India
Email: varun13_cse@yahoo.co.in
*Corresponding author

Chetna Gupta

Jaypee Institute of Information Technology,
A-10, Sector-62, Noida-201, 307 Uttar Pradesh, India
Email: chetnagupta04@gmail.com
Email: chetnagupta04@gmail.com

Maneesha Srivastav

Samsung India Electronics Pvt. Ltd.,
Plot No. 2A, Sector – 126, Noida Expressway,
Noida – 201304 (U.P), India
Email: ek.maneesha@gmail.com:

Rolf Dornberger

Institute for Information Systems,
School of Business,
University of Applied Sciences and Arts Northwestern Switzerland,
Peter Merian-Strasse 86, 4002 Basel, Switzerland
Email: rolf.dornberger@fhnw.ch

Thomas Hanne

Competence Center Systems Engineering,
Institute for Information Systems,
University of Applied Sciences and Arts, Northwestern Switzerland,
Riggenbachstr. 16, CH-4600 Olten, Switzerland
Email: thomas.hanne@fhnw.ch

Biographical notes: Varun Gupta received his PhD and Master of Technology (by research) in Computer Science and Engineering from Uttarakhand Technical University and Bachelor of Technology (honours) from Himachal Pradesh University respectively. Currently, he is working as an Assistant Professor in the Department of Computer Science and Engineering at National Institute of Technology, Hamirpur and had worked with PEC University of Technology, Chandigarh (Formerly Punjab Engineering College), Jawaharlal

Nehru Govt. Engineering College (JNGEC), Sundernagar and Indian Institute of Technology-Mandi, M.G Institute of Engineering and Technology. He had also worked as Scientist-C in Chronicler Solutions, IT Park, Chandigarh. His area of interest is software engineering (especially mass market software development). He has authored numerous research papers in peer reviewed, refereed international journals and various international and national conferences that were held in India and abroad. He had also authored a book with a German-based publisher. He is an Associate Editor of *International Journal of Computer Aided Engineering & Technology* (Inderscience Publishers), Deputy Editor-in-Chief of *International Journal of Software Engineering and Computing* (Serial Publishers), Guest Editor and on review panel board member of many renowned international journals published by Inderscience, Springer, Wiley, IGI Global etc. He also holds memberships in various technical societies such as IEEE, IEEE Industry Applications Society, IAENG etc.

Chetna Gupta holds a PhD in Computer Science and Engineering, an MTech in Computer Science and Engineering, and a BE in Computer Science and Engineering. She has more than seven years in academics. Her interest areas are software engineering – software testing, regression testing, software change impact analysis, requirement engineering, and data structures.

Maneesha Srivastav received her PhD in Computer Science and Engineering, Masters of Technology and Bachelor's of Information Science degrees in Computer Science and Engineering. Currently, she is working as Chief Engineer (R&D) in Samsung India and had more than seven years in academics. Her areas of interest are software engineering, software debugging, software project management, data structures and algorithms. She has published papers in international journals and conferences as well.

Rolf Dornberger received his PhD in Engineering in 1998 and his Diploma in Aerospace Engineering in 1994. From 1998 to 2002, he worked in the industry as an R&D-Engineer and Project Leader, Program- and IT Officer. Since then, he has been a Professor for Information Systems at the University of Applied Sciences and Arts Northwestern Switzerland, and has become the Head of the Institute for Information Systems at the School of Business FHNW in 2007. His current research interests include computational intelligence, optimisation, innovation management, and new trends and innovations.

Thomas Hanne holds Master degrees in Economics and Computer Science, and a PhD in Economics. From 1999 to 2007, he worked at the Fraunhofer Institute for Industrial Mathematics (ITWM) as a Senior Scientist. Since then, he is a Professor for Information Systems at the University of Applied Sciences and Arts Northwestern Switzerland and Head of Competence Center Systems Engineering since 2012. He is the author of about 80 journal and conference articles. His current research interests include multicriteria decision analysis, evolutionary algorithms, metaheuristics, optimisation, simulation, logistics, and supply chain management.

The special issue on 'Software life cycle management focusing on validation in software applications' contains five papers from different countries such as Algeria, France and India, selected after rigorous double-blind peer review process of numerous papers. Achieving such high quality papers across the globe would not have been made possible without the continuous efforts made by editorial board members and the reviewers of the special issue. Reviewers had put their tireless efforts for high quality rounds of double

blind review and are acknowledged with revertial thanks. We are very thankful to Dr. Yan Luo, Editor-in-Chief, *International Journal of Computer Aided Engineering and Technology* (*IJCET*) for his continuous support and encouragement in this success story. We are also very thankful to the Inderscience Production team, for their continuous support in getting the special issue published. The next few pages of this editorial briefly highlights the research work as disseminated through this special issue.

In the paper titled 'STORMKIT: a decision support tool for stormwater system analysis and design', the authors developed an interactive, user-friendly decision support tool, which provides realistic results for stormwater system analysis and design with minimum data input and without the need for detailed specialist knowledge. This tool is intended to overcome the use of either solving rigorous complex equations by time consuming trial and error attempts or complex computer models which are expensive and require significant input data. The developed tool is able to calculate the design rainfall for standard return periods and any time duration, the time of concentration (using kinematic wave method) and the runoff for particular catchments. Different types of stormwater pit inlet capacities can be analysed, whilst another window analyses different types of pipe flow capacities. Eventually, channel flows and velocities can be analysed for nine different types of regular and irregular shaped channels.

In the paper titled 'Conformance testing with ioco proxy-testers: application to web service compositions deployed in clouds', the authors proposed the conformance testing method which aims at passively testing the conformance of component-based systems. The proposal addresses the problem of reaction sequence observation in implementation environments where the installation of testing tools is not possible. The originality of the method resides in the definition of a Proxy-tester model from a specification and in the reformulation of the ioco test relation with Proxy-tester properties. Initially, the authors define the proxy-tester model and given the theoretical background to automatically generate proxy-testers from specifications modelled with IOSTSs (input output symbolic transition system). Thereafter the application of the proposed method on web service compositions deployed in clouds is described. The algorithms and passive tester architectures to collect traces from several concurrent composition instances running in parallel are also provided. Finally, the testing tool Cloud Paste and experiment results on two clouds, Google AppEngine and Windows Azure are presented.

In the paper titled 'Formal testing theory of stochastic systems under maximality semantics', the authors introduced an approach for testing stochastic systems based on stochastic refusals graphs (SRG). Those systems are modelled by maximality-based labelled stochastic transition systems 'MLSTS'. This model characterises the stochastic temporal properties of concurrent systems, under the assumption of arbitrarily distributed durations of actions. The theory and a framework for the determinisation of MLSTS and a definition of canonical tester is proposed. This theory is applied on stochastic process algebra S-LOTOS and illustrated by three case studies; temperature controller of plane reactor, alternating bit protocol and cell production.

In the paper titled 'TGG-based process for automating the transformation of UML models towards B specifications', the authors had suggest a solution to the UML graph transformation towards formal methods, in particular the B method. The goal is to automate the generation of B language, starting from UML class and state chart diagrams by mean of graph grammar rules, achieved by the tool TGG Interpreter. The major advantage of this transformation: it is a declarative; visual; and formal approach to handle graphs. A lift control system is developed to illustrate the study.

In the paper titled 'Software development life cycle model to inculcate exception handling', the authors had presents a set of generic good practices to be observed during each phase of the software development life cycle (SDLC) for establishing the application system with sound exception handling mechanism. The proposed exception handling-SDLC (EH-SDLC) model outlines various activities and tasks that are to be practiced by the developer to inculcate the strong exception handling constructs in the application. The addressed activities and tasks are based on the real-time test results. The authors had also demonstrated the results of the comparative studies performed on an application to quantitatively show that how the good practices would influence on the product reliability as a bill of exception handling.

We take this opportunity to thank the authors for choosing our special issue for their quality work and for the patience on their part. We are quite hopeful that the research community will be blessed with the research work as contained in the special issue. Finally, we do hope for a great improvement in the area of software engineering thereby bringing prosperity in all work areas that are directly or indirectly driven by the software.

Wishing the authors of this special issue a very happy reading.