The 8th IEEE International Conference on
Software Security and Reliability

SERE 2014

San Francisco, CA, USA, June 30-July 2, 2014

http://paris.utdallas.edu/sere14

Keynote Speech

Constraint-Based Reasoning in Static Analysis and Testing

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Abstract

Static analysis of source code or bytecode plays an increasingly important role in software quality and security assurance. This kind of analysis becomes more and more accurate and helpful, with the advances in constraint-based reasoning techniques like ST (satisfiability) solving and SMT (Satisfiability Modulo Theories) solving. Such techniques can also be used to generate test suites. In this talk, I will give an overview of our work on the analysis of C programs and Android apps, describe some industry needs and our experiences with technology transfer. I will also discuss some extensions to SMT solving and their potential applications in static analysis, test data generation and reliability engineering.

About the speaker

Jian Zhang is a research professor and assistant director of the Institute of Software, Chinese Academy of Sciences (ISCAS). His main research interests include automated reasoning, constraint solving, program analysis and software testing. He has served on the program committee of about 60 international conferences (APLAS, CADE, COMPSAC, ICFEM, ICSE, IJCAR, QSIC, SAT, SSIRI, VSTTE and so on). He also serves on the editorial boards of several journals including Chinese Journal of Computers, Frontiers of Computer Science, Journal of Computer Science and Technology. He is a senior member of ACM, IEEE and China Computer Federation (CCF). His research has been supported by National Science Foundation of China (NSFC, including the National Science Fund for Distinguished Young Scholars) as well as the Ministry of Science and Technology of China.