2016 International Symposium on System and Software Reliability (ISSSR 2016)

Shanghai, China
29 – 30 October 2016
2016 International Symposium on System and Software Reliability

ISSSR 2016

Table of Contents

Message from the Program Chairs.................................................................vii
Steering and Organizing Committees..........................................................viii
Program Committee.....................................................................................ix
Keynotes.......................................................................................................x

Paper Based on Keynote Speech
Testing-Based Formal Verification for Algorithmic Function Theorems and Its Application to Software Verification and Validation .................................................................1
Shaoying Liu

Session 1: Reliability and Trustworthiness
Research of Software Trustworthiness Measurement Based on Validation ........................................7
Hongwei Tao and Jie Zhao
The Quantitative Analysis of Interaction between Software and Environment ......................................13
Yanfang Ma and Liang Chen
A Measurement Model for Trustworthy Software Based on Trusted Evidences ...................................20
Yan Li and Yixiang Chen
Performance Analysis of Parallel Computing Framework on Embedded Multi-core Trustworthy Systems .................................................................25
Weidong Ma and Zhiying Wang

Session 2: Reliability and Trustworthiness
A Method for Structure-Oriented Regression Test Path Generation .....................................................30
Yanlin Li, Junwei Du, Qiang Hu, and Xiuqing Liu
An Investigation of Essential Topics on Software Fault-Proneness Prediction ........................................37
Shou-Yu Lee, Dong Li, and Yihao Li
Reliability of Software Backup System in the Presence of Common Cause Failure .........................................................................................................................................................47
   Baohua Wang

A New Intrusion Detection Mechanism in SELinux .................................................................................................................................53
   Runnan Zhang, Gang Liu, Xin Yuan, Shaomin Ji, and Guofang Zhang

**Session 3: Embedded Applications**

Indoor WSN Region Localization Based on Time Window Statistics .............................................................................................................................59
   Jun-Ping Qin, Qing-Xu Deng, Yun-Tao Wu, Hai-Bin Tong, and Xian-Li Su

Controlling Non-Touch Screens as Touch Screens Using Airpen, a Writing Tool with In-Air Gesturing Mode .................................................................................................................................68
   Qingcheng Li, Heng Cao, Ye Lu, Haoqiang Yan, and Tao Li

Classification of Tongue Images Based on Doublet SVM .................................................................................................................................77
   Jie Ding, Guitao Cao, and Dan Meng

High Speed Homework Data Collecting System under K-12 Education Circumstance .....................................................................................................................................................82
   Qingcheng Li, Heng Cao, Haoqiang Yan, and Ye Lu

Experimental Validation and Exploration of a New Kind of Synchronization in Linux .................................................................................................91
   Fangfang Zhu, Yucong Chen, Jianqiang Wang, Gaofeng Zhang, and Qingguo Zhou

**Session 4: CPS & Scheduling**

A Graphical Hierarchical CPS Architecture .....................................................................................................................................................97
   Shizhong Wang, Yuanrui Zhang, Zhihua Yang, and Yixiang Chen

A User-Level Approach for ARINC 653 Temporal Partitioning in seL4 ........................................................................................................106
   Qiao Kang, Cangzhog Yuan, Xin Wei, Yanhua Gao, and Lei Wang

Static Thermal-Aware Task Assignment and Scheduling for Makespan Minimization in Heterogeneous Real-Time MPSoCs ........................................................................................................111
   Kun Cao, Junlong Zhou, Min Yin, Tongquan Wei, and Mingsong Chen

Fault-Tolerant Scheduling of Primary-Alternate Version Based on Variable Workload ...................................................................................................................................................119
   Yingchun Huang and Qingxu Deng

MEI: A Light Weight Memory Error Injection Tool for Validating Online Memory Testers .....................................................................................................................................................129
   Xiaooiqiang Wang, Xuguo Wang, Fangfang Zhu, Qingguo Zhou, and Rui Zhou

Improve the Quality of ARC Systems Based on the Metamorphic Testing ........................................................................................................137
   Jihu Zhang, Xiaochuan Jing, Wei Zhang, Haipeng Wang, and Yunwei Dong

**Author Index** ................................................................................................................................................................................................142