ShengYu Shen

Business Address:
School of Computer
National University of Defense Technology
Office 604,
ChangSha, HuNan ,China.

Education:

Ph.D., Computer Science, National University of Defense Technology, June 2005.

Thesis Title: Explaining Counterexample of Model Checking.

B.S., Computer Science, National University of Defense Technology, June 1997.

Experience:

Summary: I have over ten years of experience on logic synthesis and timing analysis of integrated circuits. And I have also work on formal verification for about 7 years.

January, 2010 – Present, Associate Professor, School of Computer, National University of Defense Technology. Teaching classes on integrated circuit design and designing routing chips for supercomputers.

June, 2005 – December,2009, Lecturer, School of Computer, National University of Defense Technology. Teaching classes on integrated circuit design and designing routing chips for supercomputers.

Research Interests:

Complementary Synthesis: One of the most difficult jobs in designing communication and multimedia chips is to design and verify the complex complementary circuit pair (E,E^{-1}), in which the encoder E transforms information into a format suitable for transmission and storage, while its complementary circuit(or decoder) E^{-1} recovers this information. In order to facilitate this job, I propose the complementary synthesis algorithm to automatically synthesize the decoder circuit of an encoder.

Counterexample explanation: One of the major advantages of model checking in comparison to such method as theorem proving is the production of a counterexample, which explains how the system violates some assertion. However, it is a tedious task to understand the complex counterexamples generated by model checker. Therefore, I investigate how to automatically extract useful information to aid the understanding of counterexample.

Honors:

Distinguished Doctoral Dissertation prize of National University of Defense Technology, 2007.

Professional Activities:

Reviewer for IEEE Transactions on COMPUTER-AIDED DESIGN of Integrated Circuits and Systems(TCAD)(3 papers) , ACM Transactions on Design Automation of Electronic Systems(TODAES) (2 papers).

Association for Computing Machinery, Special Interest Group on Design Automation (ACM SIGDA) member

IEEE, IEEE Circuits and Systems Society, IEEE Computer Society member

External Reviewer for National Natural Science Foundation of China

Funding:

"Automatically synthesizing complementary circuits for communication applications", PI: ShengYu Shen, National Natural Science Foundation of China, 61070132, Jan 2011 to Dec 2013.

"Repairing programs with counterexample minimization", PI: ShengYu Shen, National Natural

Science Foundation of China, 60603088, Jan 2007 to Dec 2009.

Journal Papers:

Shengyu Shen, Jianmin Zhang, Ying Qin and Sikun Li, A Halting Algorithm to Determine the Existence of the Decoder. IEEE Transactions on CAD of Integrated Circuits and Systems, Volume 30 , Issue 10, pp 1556-1563, 2011.

Shengyu Shen, Jianmin Zhang, Ying Qin and Sikun Li, Synthesizing Complementary Circuits Automatically. IEEE Transactions on CAD of Integrated Circuits and Systems, Volume 29 , Issue 8, pp 1191-1202, 2010.

Conference Papers:

Shengyu Shen, Ying Qin, Jianmin Zhang and Sikun Li, Inferring Assertion for Complementary Synthesis. Accepted by ICCAD'11.

Shengyu Shen, Ying Qin, Jianmin Zhang and Sikun Li, A Halting Algorithm to Determine the Existence of Decoder. in FMCAD'10, pp 91-100,2010.

Shengyu Shen, Jianmin Zhang, Ying Qin and Sikun Li, Synthesizing Complementary Circuits Automatically. in ICCAD 2009, pp 381-388,2009.

ShengYu Shen, Ying Qin, and SiKun Li. Minimizing Counterexample of ACTL Property. In CHARME 2005. LNCS 3725, pp 393-397, 2005.

ShengYu Shen, Ying Qin, and SiKun Li. A Faster Counterexample Minimization Algorithm Based on Refutation Analysis. In DATE 2005. Volume 2/3, pp 672-677, 2005.

ShengYu Shen, Ying Qin, and SiKun Li. A Fast Counterexample Minimization Approach with Refutation Analysis and Incremental SAT. In ASPDAC 2005. volume 1/2, pp 451-454, 2005.

ShengYu Shen, Ying Qin, and SiKun Li. Minimizing Counterexample with Unit Core Extraction and Incremental SAT. In VMCAI 2005. LNCS 3385, pp 298-312, 2005.

ShengYu Shen, Ying Qin, and SiKun Li. Localizing Errors in Counterexample with Iteratively Witness Searching. In ATVA 2004. LNCS 3299, pp 456-469, 2004.