

LI HUANG

PhD Student, Schaffhausen Institute of Technology

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RESEARCH INTERESTS

Main Research topics:

- Software engineering, software verification, formal method
- Combination of static and dynamic analysis techniques, i.e., complementary proving and testing
- Static analysis of concurrent object-oriented program

EDUCATION

- PhD Student, Software Engineering
 - Chair of Software and Security, Schaffhausen Institute of Technology
 - November 2020 - Present
 - Advisor: Prof. Bertrand Meyer
- Master, Software Engineering
 - School of Data and Computer Science, Sun Yat-Sen University
 - September 2017 - July 2019
 - Master's Thesis: Tool Supported Verification of (Non)-functional Requirements in Cyber Physical Systems Using Simulink Design Verifier
 - GPA: 94/100
 - Advisors: Associate Prof. Eun-Young Kang, Prof. Zibin Zheng
- Bachelor, Software Engineering
 - School of Data and Computer Science, Sun Yat-Sen University
 - September 2013 - July 2017
 - GPA: 3.9/5.0
 - Bachelor's Thesis: Tool Supported Verification and Validation of Automotive Systems
 - Thesis Advisor: Associate Prof. Eun-Young Kang

RESEARCH EXPERIENCE

- Research Engineer at China MIIT Fifth Electronics Research Institute
 - May 2020 - July -2020
 - Formal verification of security properties for Vehicular Ad-hoc Networks (VANET)¹
 - Security analysis of embedded integrated circuits.
- Research Assistant at Sun Yat-Sen University
 - July 2019 - February 2020
 - Tool-supported verification and validation of CPS.

¹Samara, Ghassan, Wafaa AH Al-Salihy, and R. Sures. "Security analysis of vehicular ad hoc networks (VANET)." In 2010 Second International Conference on Network Applications, Protocols and Services, pp. 55-60. IEEE, 2010.

- Component-based analysis of functional and timing constraints of rigorous CPS using stochastic BIP².

TEACHING EXPERIENCE

- Lecturer
 - *C Programming Language*, Beibu Gulf University, School of Electronic and Information Engineering, Fall 2020.
- Teaching Assistant
 - *Computer Language and Implementation*, Sun Yat-Sen University, School of Data and Computer Science, Software Engineering Institute, Spring 2017, 2018.
 - *Introduction to Cyber-Physical Systems: Intelligent Vehicle Software Design*, Sun Yat-Sen University, School of Data and Computer Science, Software Engineering Institute, Spring 2017, 2018.
 - *Introduction to Real-Time Systems*, Sun Yat-Sen University, School of Data and Computer Science, Software Engineering Institute, Fall 2017, 2018.

AWARD

- IEEE Real-Time Systems Symposium (RTSS), Hong Kong, Student Travel Grant (2019).
- European Joint Conferences on Theory and Practice of Software (ETAPS), Prague, Czech Republic, Student Scholarship (2019)
- Formal Methods in Computer-Aided Design (FMCAD), University of Texas, Austin, USA, Student Forum Travel Award (2018)
- Chinese National Endeavor Scholarship (3 times, 2013 - 2016)
 - Awarded by Chinese Government (top 5%)
- Excellent Student Scholarship (3 times, top 20% based on GPA, 2013 - 2016)
- Excellent Team in Ke Teng Cup Software Creativity Competition (top 5 teams, 2014)

PUBLICATIONS

- International Conference Publications
 - C1. **Li Huang** and Eun-Young Kang. “Work-In-Progress: Formal Analysis of Hybrid-Dynamic Timing Behaviors in Cyber-Physical Systems.” In the *The IEEE Real-Time Systems Symposium-Brief Presentation (RTSS-BP)*, Hong Kong, China, December, 2019.
 - C2. **Li Huang**, Tian Liang and Eun-Young Kang. “Formal Verification of Dynamic and Stochastic Behaviors for Automotive Systems.” In the *International Conference on Engineering of Complex Computer Systems (ICECCS)*, Guangzhou, China, November, 2019.
 - C3. **Li Huang**, Tian Liang and Eun-Young Kang. “Tool-Supported Analysis of Dynamic and Stochastic Behaviors in Cyber-Physical Systems.” In the *International Conference on Software Quality, Reliability, and Security (QRS)*, University of Sofia, Sofia, Bulgaria, July, 2019.
 - C4. **Li Huang** and Eun-Young Kang. “Formal Verification of Safety & Security Related Timing Constraints for A Cooperative Automotive System.” In the *European Joint Conferences on Theory and Practice of Software (ETAPS-FASE)*, pp. 210-227, Springer, Prague, Czech Republic, April, 2019.

²<http://www-verimag.imag.fr/Rigorous-Design-of-Component-Based.html>

- C5. **Li Huang** and Eun-Young Kang. “SMT-based Probabilistic Analysis of Timing Constraints in Cyber-Physical Systems.” In the *Formal Methods in Computer-Aided Design (FMCAD) Student Forum*, University of Texas, Austin, USA, October, 2018.
- C6. Eun-Young Kang and **Li Huang**. “Probabilistic Analysis of Timing Constraints in Autonomous Automotive Systems using Simulink Design Verifier.” In the *International Symposium on Dependable Software Engineering Theories, Tools and Applications (SETTA)*, pp. 170-186, Springer, Beijing, China, September 2018.
- C7. Eun-Young Kang, Dongrui Mu, and **Li Huang**. “Probabilistic Verification of Timing Constraints in Automotive Systems using UPPAAL-SMC.” In the *International Conference on Integrated Formal Methods (IFM)*, pp. 236-254, Springer, Maynooth, Ireland, September 2018.
- C8. Eun-Young Kang, **Li Huang**, and Dongrui Mu. “Formal Verification of Energy and Timed Requirements for a Cooperative Automotive System.” In the *ACM/SIGAPP Symposium On Applied Computing in Software Engineering (SAC)*, pp. 1492-1499, ACM, Pau, France, April 2018.
- C9. Eun-Young Kang, Dongrui Mu, **Li Huang**, and Qianqing Lan. “Verification and Validation of a Cyber-Physical System in the Automotive Domain.” In *International Conference on Software Quality, Reliability and Security (QRS)*, pp. 326-333, IEEE, Prague, Czech Republic, July 2017.
- C10. Eun-Young Kang, Dongrui Mu, **Li Huang** and Qianqing Lan. “Model-Based Analysis of Timing and Energy Constraints in an Autonomous Vehicle System.” In *International Conference on Software Quality, Reliability and Security (QRS)*, pp. 525-532, IEEE, Prague, Czech Republic, July 2017.
- Technical Reports
- R1. Eun-Young Kang, Dongrui Mu and **Li Huang**. “Probabilistic Analysis of Weakly-Hard Real-Time Systems,” School of Data and Computer Science, Sun Yat-Sen University, Technical Report TR-SDCS-18, July 2018. [Online]. Available: arXiv: 1807.00003.
- R2. Eun-Young Kang and **Li Huang**. “Formal Specification & Analysis of Autonomous Systems in PrCCSL/Simulink Design Verifier,” School of Data and Computer Science, Sun Yat-Sen University, Technical Report TR-SDCS-18, June 2018. [Online]. Available: arXiv: 1806.07702.
- R3. Eun-Young Kang, **Li Huang**, and Dongrui Mu. “Formal Analysis of Non-functional Properties for a Cooperative Automotive System,” School of Data and Computer Science, Sun Yat-Sen University, Technical Report TR-SDCS-17, March 2018. [Online]. Available: arXiv: 1803.06075.
- R4. Eun-Young Kang, Dongrui Mu, **Li Huang**, and Qianqing Lan. “Model-Based Verification and Validation of an Autonomous Vehicle System: Simulation and Statistical Model Checking,” School of Data and Computer Science, Sun Yat-Sen University, Technical Report TR-SDCS-17, March 2018. [Online]. Available: arXiv: 1803.06103.