



Shuanglong Kan

*School of Computer Science and Engineering
Nanyang Technological University*

(+65) 833-56-353

email: kanshuanglong@outlook.com

homepage: <http://kanshuanglong.github.io>

RESEARCH INTERESTS

The topics that I am interested in include: (1) formal modeling and specification languages that can naturally characterize systems features; (2) formal verification techniques, such as model checking and theorem proving; (3) code generation from formal models.

WORK EXPERIENCE

Research Fellow

Sep. 2017-now

*School of Computer Science and Engineering
Nanyang Technological University, Singapore*

Supervisor: Shang-wei Lin and Yang Liu

Research Topics: build the formal semantics of two real-world languages: *Rust* (a memory-safety language) and *Solidity* (a smart contract language)

EDUCATION

PhD, Computer Science (master-doctor combined program)

Sep. 2011 - Apr. 2017

Nanjing University of Aeronautics and Astronautics (NUAA)

Thesis: The Research on the Trustworthy Code Generation from SIGNAL

Advisor: Zhiqiu Huang (NUAA)

Courses : parallel and distributed systems, distribution calculation, formal methods, petri net, software quality analysis and measurement, theoretical computer science, advanced artificial intelligence, principle of model checking, etc.

Academic Visitor

Jan. 2016-Jun. 2016

IRIT, University Toulouse III, France

Tech Report: Semantics Preservation of the Translation from SIGNAL into Multi-threaded Code

Advisor: Jean-Paul Bodeveix and Mamoun Filali

BS, Computer Science

Sep. 2007 - Apr. 2011

Nanjing University of Aeronautics and Astronautics

Advisors: Zhiqiu Huang

Courses: C and C++ language, data structure, algorithm design and analysis, the principle of compiler, operating system, database, set theory and logic, automata theory, network, etc.

SKILLS

- **Programming Languages:** C, Java, OCaml, Rust
- **Formal Modelling and Verification Tools:**
 1. Spin model checker
 2. Event-B
 3. Synchronous language Signal
 4. K-Framework (A rewriting-logic modelling tool)

PEER-REVIEWED JOURNAL PAPERS

1. Shuanglong Kan and Zhiqiu Huang, “Partial Order Reduction for the full Class of State/Event Linear Temporal Logic”, *Computer Journal* **61(5)**, 629-644 (2018). (Core Rank A*)
2. Shuanglong Kan and Zhiqiu Huang, “Detecting safety-related components in statecharts through traceability and model slicing”, *Software - Practice and Experience* **48(3)**, 428-448 (2018). (Core Rank A)
3. Shuanglong Kan, Zhiqiu Huang, Zhe Chen, Weiwei Li, Yutao Huang, “Partial order reduction for checking LTL formulae with the next-time operator”, *Journal of Logic and Computation* **27(4)**, 1095-1131 (2016). (Core Rank A)
4. Weiwei Li, Shuanglong Kan, Zhiqiu Huang, “A Better Translation From LTL to Transition-Based Generalized Büchi Automata”, *IEEE Access* **5**, 27081-27090 (2017).
5. Shuanglong Kan, Zhiqiu Huang, Zhe Chen, Bingfeng Xu, “Bounded Model Checking of C Programs Using Event Automaton Specifications”, *Journal of Software* **25(11)**, 2452-2472 (2014). **Chinese Journal**

INTERNATIONAL CONFERENCES

1. Shuanglong Kan, Zhiqiu Huang, Zhe Chen, Zhiqiu Huang, “Partial Order Reduction for State/Event Systems.”, *ICFEM 2016* , 329-345 (2016). (Core Rank B)
2. Shuanglong Kan, “Traceability and model checking to support safety requirement verification.”, *SIGSOFT FSE 2014* , 783-786 (2014). short paper (Core Rank A*)
3. Jean-Paul Bodeveix, Mamoun Filali-Amine, Shuanglong Kan, “A refinement-based compiler development for synchronous languages”, *MEMOCODE 2017* , 165-174 (2017).

PREPRINT arxiv

1. Shuanglong Kan, David Sanán, Shang-Wei Lin and Yang Liu, “K-Rust: An Executable Formal Semantics for Rust.”, *CoRR abs/1804.07608* , 1-20 (2018).
2. Shuanglong Kan, Jean-Paul Bodeveix and Mamoun Filali-Amine, “Semantics Preservation of the Translation from SIGNAL into Multi-threaded Code”, *Tech Report* , 1-25 (2016).

3. Jiao Jiao, Shuanglong Kan, Shang-Wei Lin, David Sanán, Yang Liu, Jun Sun, “Executable Operational Semantics of Solidity”, *CoRR abs/1804.01295* , 1-22 (2018).

SERVICES

Sub-Reviewer: TACAS 2018, CCS 2018, FTSCS 2018, ATVA 2018

PROJECTS

1. Securify: A compositional Approach of Building Security Verified System, <http://securify.sce.ntu.edu.sg/>(Participant)
2. Research on Privacy Modeling and Verification in Evolving Cloud Computing, National Natural Science Foundation of China (Participant)