

# Jiaying Li

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## EDUCATION

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- SEP. 2013 - JUN. 2018    Ph.D. in Information Systems of Technology and Design,  
**Singapore University of Technology and Design**, Singapore  
Advisor: Assoc. Prof. Jun Sun
- SEP. 2011 - JUN. 2013    Study in Institute of Computing Technology  
**Chinese Academy of Sciences**, Beijing, China  
Advisors: Lu Xu, Jianfeng Zhan
- SEP 2007 - AUG. 2011    B.Eng. in College of Software  
**Nankai University**, Tianjin, China  
GPA: 3.9/4.0; RANK: 3/134

## RESEARCH INTERESTS

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Software engineering, program analysis, machine learning

## RESEARCH EXPERIENCE

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- SEP. 2016 - AUG. 2017    ZIMU: Complex invariant learning framework based on program structures
- Design an algorithm to partition program based on program structures and learn disjunctive invariants based on the resulting partitions;
  - Design a heuristic algorithm to search for good program partitionings that lead to simpler loop-invariant by exploring program structure adaptively.
- OCT. 2016 - APR. 2017    PTA-LEARN: Parametric timed automata verification with active learning
- Enhance the scalability of existing model checkers for PTA by adopting machine learning techniques;
  - Form conjectures on the constraint based on sampling and classification;
  - Actively seek out informative parameter values and check the corresponding timed automata so that we converge to an accurate conjecture quickly.
- DEC. 2015 - JUN. 2016    ZILU: Invariant generation framework based on classification and selective sampling
- Build an invariant learning framework based on program variable valuations in run-time and classification algorithms;
  - Propose an active learning technique, known as selective sampling, to overcome the limitation of random sampling;
  - Propose to generate disjunctive invariants through *path-sensitive* learning.
- OCT. 2010 - JUNE. 2011    AN OPERATING SYSTEM KERNEL
- Design a micro-kernel of operating systems based on the book ‘Orange S’ and Linux kernel source code version 0.11;
  - Implement most of the basic kernel functions, including process management, I/O, interprocess communication, file system, and memory management.

## WORKING EXPERIENCE

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JUL. 2013 - SEP. 2013	Research assistant in Information Systems of Technology and Design, Singapore University of Technology and Design, Singapore
DEC. 2012 - JUN. 2013	Research assistant in Advanced Computer Research Center, Institute of Computing Technology, Chinese Academy of Sciences, Beijing, China
MAR. 2012 - NOV. 2012	Research assistant in Data Storage and Management Technology Research Center, Institute of Computing Technology, Chinese Academy of Sciences, Beijing, China
OCT. 2011 - JAN. 2012	Developer in Trend Media Corporation Limited., Beijing, China
OCT. 2009 - JAN. 2010	Developer in Sun Micro systems, Inc., Beijing, China

## PUBLICATION LIST

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**Jiaying Li**, Jun Sun, Learning Disjunctive Invariants based on Loop Structures. *In the 40th International Conference on Software Engineering (ICSE'18)*, Gothenburg, Sweden, 2018. (under review)

**Jiaying Li**, Jun Sun, Bo Gao and 'Etienne Andre', Classification-based Parameter Synthesis for Parametric Timed Automata. *In the 19th International Conference on Formal Engineering Methods (ICFEM'17)*, Xi'an, China, 2017.

**Jiaying Li**, Jun Sun, Li Li, Quang Loc Le and Shang-Wei Lin, Automatic Loop-invariant Generation and Refinement through Selective Sampling. *In the 32nd IEEE/ACM International Conference on Automated Software Engineering (ASE'17)*, Illinois, USA, 2017.

Truong Khanh Nguyen, Tian Huat Tan, Jun Sun, **Jiaying Li**, Yang Liu, Manman Chen, Jin Song Dong, Scaling BDD-based Timed Verification with Simulation Reduction, *The 19th International Conference on Formal Engineering Methods (ICFEM'16)*, Tokyo, Japan, 2016.

**Jiaying Li**, An Invariant Inference Framework using Active Learning and SVMs, *In the 20nd International Conference on Engineering of Complex Computer Systems (ICECCS'15)*, Doctorial Symposium, Gold Coast, Australia, 2015.

## SCHOLARSHIPS

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SEP. 2013 - AUG. 2018	SUTD President's Graduate Fellowship
OCT. 2010 - JUN. 2011	First Prize National Fellowship
OCT. 2009 - JUN. 2010	National Scholarship
OCT. 2008 - JUN. 2009	National Endeavor Scholarship
OCT. 2007 - JUN. 2008	Second Prize National Fellowship

## LANGUAGES

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CHINESE:	Mother tongue
ENGLISH:	Fluent

## SERVICES

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Volunteer:	FM 2014
Presentation:	ICECCS 2015, ICFEM 2016
Teaching assistant:	Machine learning (undergraduate, ISTD, SUTD, 2014) Elements of software construction (undergraduate, ISTD, SUTD, 2014)

## SKILLS

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Programming: Professional in C, C++, bash shell  
Operating Systems: Professional in Linux

## INTERESTS AND ACTIVITIES

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Technology, Open-Source, Programming  
Marathon, Football, Diving, Swimming, Tennis