Jiaying Li

Address: 1.304, 8 Somapah Road, 487372, Singapore
Phone: (+65) 9132 7556
email: lijiaying1989@gmail.com
website: http://jiaying.li

Education

Sep. 2013 - Jun. 2018 Ph.D. in Information Systems 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

Software engineering, program analysis, machine learning

Research Experience

Sep. 2016 - Aug. 2017 **Zimu:** Complex invariant learning framework based on program structures

- Design an algorithm to partition program based on program structuren 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, interprococess communication, file system, and memory management.

Publication list

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 Étienne André. 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, Austrilia, 2015.

Scholarships

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

Chinese:	Mothertongue
English:	Fluent

Services

Volunteer:	FM 2014
Reviewer:	ICECCS 2017
Presentation:	ICECCS 2015, ICFEM 2016
Teaching assistant:	Machine learning (undergraduate, ISTD, SUTD, 2014)
	Elements of software construction (undergraduate, ISTD, SUTD, 2014)

Skills

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

Interests and Activities

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