

Zhifeng Lai

Department of Computer Science & Engineering
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Research Interests

Software engineering issues related to software testing and analysis, programming languages for concurrency, and ubiquitous computing. In particular, I have been working on analyzing defects in concurrent software and ubiquitous systems.

Education

- 09/2006-08/2010 **Ph.D.** Computer Science, The Hong Kong University of Science & Technology, Hong Kong
Advisor: Prof. Shing-Chi Cheung
GGA : 11.40 (A: first class honours)
- 09/2004-07/2006 **M.Eng.** Computer Software & Theory, Sun Yat-Sen University, China
Advisor: Prof. Yunfei Jiang
GPA: 91/100 (overall) 93/100 (major)
- 09/2001-07/2004 **B.S.** Computer Science, South China Normal University, China
(Completed a 4-year undergraduate program in 3 years.)
Advisor: Prof. Xiaoming Wang
GPA: 89/100 (overall) 92/100 (major)

Research Experience

- 09/2006-present **Research Assistant**, The Hong Kong University of Science & Technology, Hong Kong
- Designed and implemented a system, ASSETCHECKER, which **automatically** checks atomic-set serializability violations statically with low false-positive rate.
 - Designed and implemented a system, ASSETFUZZER, which **actively** controls a thread scheduler to find real atomic-set serializability violations with high chances.
 - Designed and implemented a system, ASSETPREDICTOR, which **precisely** infers potential atomic-set serializability violations from even violation-free executions.
 - Formulated test adequacy criteria for wireless sensor network applications; empirically evaluated the high fault-detection ability of the new criteria.
- 09/2004-07/2006 **Research Assistant**, Sun Yat-Sen University, China
- Designed and implemented a system, AMLSGA, which learns an action model from an incomplete domain description and existing plan examples using generic algorithm.
 - Proposed a formal model to describe multi-agent systems based on rough-set theory. The model gives a criterion to classify agents and an algorithm to allocate tasks among agents.

Teaching Experience

- 08/2008-12/2008 **Teaching Assistant**, The Hong Kong University of Science & Technology, Hong Kong
COMP102: Programming Fundamentals and Methodology
- 08/2007-12/2007 **Teaching Assistant**, The Hong Kong University of Science & Technology, Hong Kong

- 01/2007-05/2007 COMP211: Introduction to Software Engineering
Teaching Assistant, The Hong Kong University of Science & Technology, Hong Kong
COMP151: Object-Oriented Programming
- 08/2006-12/2006 **Teaching Assistant**, The Hong Kong University of Science & Technology, Hong Kong
COMP211: Introduction to Software Engineering

Publications

Referred Journal Publications

- CJC '07 **Zhifeng Lai** and Yunfei Jiang. Learning Action Model in AI Planning Based on Genetic Algorithm. *Chinese Journal of Computers*, 30(6): 945-953, June 2007. (in Chinese)

Referred Conference Publications

- ICSE '10 **Zhifeng Lai**, S.C. Cheung, and W.K. Chan. Detecting Atomic-Set Serializability Violations in Multithreaded Programs through Active Randomized Testing. In *Proceedings of the ACM/IEEE 32nd International Conference on Software Engineering (ICSE 2010)*, Cape Town, South Africa, May 2-8, 2010. (Acceptance rate: 13.7%, 52 out of 380)
- FSE '08 **Zhifeng Lai**, S.C. Cheung, and W.K. Chan. Inter-Context Control-Flow and Data-Flow Test Adequacy Criteria for nesC Applications. In *Proceedings of the 16th ACM SIGSOFT International Symposium on Foundations of Software Engineering (SIGSOFT 2008/FSE16)*, Atlanta, GA, U.S.A., November 9-14, 2008. (Acceptance rate: 20.4%, 31 out of 152)
- QSIC '06 **Zhifeng Lai**, S.C. Cheung, and Yunfei Jiang. Dynamic Model Learning Using Genetic Algorithm under Adaptive Model Checking Framework. In *Proceedings of the 6th International Conference on Quality Software (QSIC 2006)*, Beijing, China, October 26-28, 2006. (Acceptance rate: 27.6%, 50 out of 181)
- GrC '05 Xiaoping Ye, **Zhifeng Lai**, Lin Ye, and Qichao Shen. Tasks-Based MAS Model on the Granular Computing Framework. In *Proceedings of International Conference on Granular Computing (GrC 2005)*, Beijing, China, July 25-27, 2005. (Acceptance rate: 30.0%, 87 out of 290)

Technical Reports

- HKUST-CS09-07 **Zhifeng Lai**, S.C. Cheung, and W.K. Chan. Detecting Atomic-Set Serializability Violations in Multithreaded Programs through Active Randomized Testing. *Technical Report HKUST-CS09-07*, Department of Computer Science & Engineering, The Hong Kong University of Science & Technology, Clear Water Bay, Kowloon, Hong Kong, September 2009.
- HKUST-CS08-04 **Zhifeng Lai**, S.C. Cheung, and W.K. Chan. Enabling Dynamic Slicing of Wireless Sensor Network Applications through Efficient Trace Recording. *Technical Report HKUST-CS08-04*, Department of Computer Science & Engineering, The Hong Kong University of Science & Technology, Clear Water Bay, Kowloon, Hong Kong, September 2008.
- HKUST-CS06-05 **Zhifeng Lai**, S.C. Cheung, and Yunfei Jiang. Dynamic Model Learning Using Genetic Algorithm under Adaptive Model Checking Framework. *Technical Report HKUST-CS06-05*, Department of Computer Science & Engineering, The Hong Kong University of Science & Technology, Clear Water Bay, Kowloon, Hong Kong, July 2006.

Awards and Honors

- 03/2010 ACM SIGSOFT **Research Travel Grant** for Attendance of ICSE 2010.
- 2006-2010 **Postgraduate Scholarship**, The Hong Kong University of Science & Technology.
- 06/2009 **Merit Award**, Excellent Performance in the *Peer Counselor Training Program*, Student Life Center, Student Affairs Office, The Hong Kong University of Science & Technology.
- 05/2009 **Outstanding Service Award**, *University Campus Orienteering Game*, Hong Kong.
- 09/2008 ACM SIGSOFT **Research Travel Grant** for Attendance of SIGSOFT 2008/FSE 16.
- 06/2006 **Excellent Master Thesis Award**, Computer Software Institute, Sun-Yat Sen University.
- 12/2005 **Second Prize**, *Zhentai Scholarship*, Sun-Yat Sen University.
- 06/2004 **Excellent Undergraduate Thesis Award**, South China Normal University.
- 2002-2004 **Excellent Undergraduate Scholarship**, South China Normal University.
- 03/2004 **Honorable Mention**, *Mathematical Contest in Modeling*, The Consortium for Mathematics and its Applications, National Security Agency, U.S.A.
- 10/2003 **Second Prize**, China Undergraduate *Mathematical Contest in Modeling*, Guangdong Province, China Society of Industrial and Applied Mathematics, Ministry of Education, P.R.C.

Qualifications

- 09/2008 Certificate of Attendance, *Adult Mental Health First Aid Course*, ORYGEN Research Center, University of Melbourne.
- 08/2007 ATC Certified *ARM Engineer* (No. 100793)
- 01/2007 Certificate of Achievement, *Training Program for Teaching Assistants*, The Hong Kong University of Science & Technology.
- 06/2005 Certificate of Attendance, *Methodology and Techniques of Visual Modeling with UML Course*, IBM Rational University Program.
- 08/2004 Certified *Software Designer*, Ministry of Information Industry, P.R.C. (No. 04000757)
- 09/2003 Band *Six* Certificate, *College English Test*, Department of Higher Education, Ministry of Education, P.R.C. (No. 0366280783150417)
- 03/2003 Band *Four* Certificate, *College English Test*, Department of Higher Education, Ministry of Education, P.R.C. (No. 0314280773270800)

Services

Academic Services

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|----------------|--|
| Member | <ul style="list-style-type: none"> • The ACM Special Interest Group on Software Engineering (No. 4909574) • The Hong Kong Computer Society (No. S-24952) |
| PC Member | <ul style="list-style-type: none"> • The 2010 International Congress on Computer Applications and Computational Science (CACAS 2010) |
| Student Helper | <ul style="list-style-type: none"> • The 4th International Conference on e-Business Engineering (ICEBE 2007) |
| Reviewer | <ul style="list-style-type: none"> • Journal of Empirical Software Engineering (EMSE), 2010. • Special Issue on Dynamic Analysis and Testing of Embedded Software, Journal of Systems and Software (JSS), 2010. • Special issue on Software Engineering, Journal of Computer Science and Technology (JCST), No.5, September 2008. |
| Co-Reviewer | <ul style="list-style-type: none"> • The 33rd International Conference on Software Engineering (ICSE 2011) • The 17th Asia Pacific Software Engineering Conference (APSEC 2010) • The 19th International Symposium on Software Testing and Analysis (ISSTA 2010) |

- The 2nd International Workshop on TESTING Techniques & Experimentation Benchmarks for Event-Driven Software (TESTBEDS 2010)
- The 10th International Conference on Quality Software (QSIC 2010)
- The 32nd International Conference on Software Engineering (ICSE 2010)
- The 16th Asia-Pacific Software Engineering Conference (APSEC 2009)
- The 25th IEEE International Conference on Software Maintenance (ICSM 2009)
- The 9th International Conference on Quality Software (QSIC 2009)
- The 7th joint meeting of the European Software Engineering Conference and the ACM SIGSOFT Symposium on the Foundations of Software Engineering (ESEC/FSE 2009)
- The 19th International Symposium on Software Reliability Engineering (ISSRE 2008)
- The 8th International Conference on Quality Software (QSIC 2008)
- The 20th IFIP International Conference on Testing of Communicating Systems and 8th International Workshop on Formal Approaches to Testing of Software (TESTCOM/FATES 2008)
- The 30th International Conference on Software Engineering, Research Demonstrations (ICSE 2008)
- The 11th Fundamental Approaches to Software Engineering (FASE 2008)
- The 31st Annual International Computer Software and Applications Conference (COMPSAC 2007)
- The 14th Asia-Pacific Software Engineering Conference (APSEC 2007)

Extra-Curricular Services

- 04/2008-06/2009 • **Head of Volunteer Division**, Hong Kong Chiu Chow Student Association.
- 09/2008-06/2010 • **President of Hiking Club**, Mainland Student and Scholar Society, The Hong Kong University of Science & Technology.
- 09/2008-06/2009 • "Happy Living" **Peer Counselor** for Mental Health, The Hong Kong University of Science & Technology.
- 03/2009-05/2009 • **Executive Committee Member**, 2009 University Campus Orienteering Game, Hong Kong.

References

Prof. Shing-Chi Cheung

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