Jianlin Li

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EDUCATION

UNIVERSITY OF WATERLOO
PH.D. IN COMPUTER SCIENCE
Supervisor: Yizhou Zhang and Ondřej Lhoták
Cumulative GPA:98.33
Sep. 2021 - Expected Sep. 2025 Waterloo, Canada

SAARLAND UNIVERSITY (EXCHANGE)
MASTER IN COMPUTER SCIENCE
Supervisor: Holger Hermanns
Grade: 1.3 (germany grading system)
Sep. 2019 - Aug. 2020
Saarbruecken, Germany

INSTITUTE OF SOFTWARE, CHINESE ACADEMY OF SCIENCES
MASTER IN COMPUTER SCIENCE
Supervisor: Lijun Zhang | GPA: 3.88/4.0
Sep. 2018 - Aug. 2021 | Beijing

NANJING UNIVERSITY OF AERONAUTICS AND ASTRONAUTICS
BACHELOR OF COMPUTER SCIENCE
Supervisor: Zhe Chen
GPA: 4.3/5.0 | Ranking: No.1 / 102
Jun. 2018 | Nanjing, China

COURSEWORK

COURSE PROJECTS

• Variational inference reinforcement learning implemented in Pyro
• Generalized Minsky machine halting $\preccurlyeq_m$ 2 counter machine halting in Coq.
• C(resp. Java)interprocedural points-to analysis in LLVM(resp. Soot).
• xv6 programming projects for OS.
• 5 stage pipelined MIPS-32 processor.

SKILLS

PROGRAMMING SKILLS

Coq, Agda, Model Checkers, OCaml, Rust, Haskell, LLVM, Soot, Verilog, MIPS Assembly, Tensorflow, C++, Java, LaTeX, Shell, Python, Objective-C, Swift

LANGUAGES

Chinese native speaker
English TOEFL: Listening 27 • Speaking 27

HIGHLIGHTS

- Self-motivated Phd student in computer science with strong research experience in probabilistic programming [1–3], abstract interpretation [4–6], probabilistic model checking [7], linear temporal logic, ω-regular languages, and software verification [8].
- Good academic writing and presentation skills. Served as a student volunteer at CONCUR'18, SSFM'18, SSFM'19, and LICS'20, as a subviewer at LICS'18, TASE'19, FM'19, FMAC'19, and TACAS'21.

PUBLICATIONS

[1] **Jianlin Li** and Yizhou Zhang.
Compiling with Generating Functions.
Proc. ACM Program. Lang., 9(**ICFP 2025**, Singapore).

[2] **Jianlin Li**, Eric Wang, and Yizhou Zhang.
Compiling Probabilistic Programs for Variable Elimination with InformationFlow.
Proc. ACM Program. Lang., 8(**PLDI 2024**, Copenhagen, Denmark).

[3] **Jianlin Li**, Leni Ven, Pengyuan Shi, and Yizhou Zhang.
Type-Preserving, Dependence-Aware Guide Generation for Sound, Effective Amortized Probabilistic Inference.
Proc. ACM Program. Lang., 7(**POPL 2023**, Boston, United States).

[4] **Jianlin Li**, Jiangchao Liu, Pengfei Yang, Liqian Chen, Xiaowei Huang, and Lijun Zhang. Analyzing Deep Neural Networks with Symbolic Propagation: Towards Higher Precision and Faster Verification. In *26th Static Analysis Symposium*, ***SAS 2019***, *Porto, Portugal*.

[5] Renjue Li, **Jianlin Li**, Cheng-Chao Huang, Pengfei Yang, Xiaowei Huang, Lijun Zhang, Bai Xue, and Holger Hermanns. PRODeep: A Platform for Robustness Verification of Deep Neural Networks. In ***ESEC/FSE 2020*** *: 28th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering, USA*.

[6] Pengfei Yang, Renjue Li, **Jianlin Li**, Cheng-Chao Huang, Jingyi Wang, Jun Sun, Bai Xue, and Lijun Zhang. Improving neural network verification through spurious region guided refinement. In *Tools and Algorithms for the Construction and Analysis of Systems - 27th International Conference*, ***TACAS 2021***, *as Part of* ***ETAPS 2021***, *Luxembourg*.

[7] Hongfei Fu, Yi Li, and **Jianlin Li**. Verifying Probabilistic Timed Automata Against Omega-Regular Dense-Time Properties. In *15th International Conference on Quantitative Evaluation of SysTems* ***QEST 2018***, *China*.

[8] Maria Christakis, Hasan Ferit Eniser, Holger Hermanns, Jörg Hoffmann, Yugesh Kothari, **Jianlin Li**, Jorge A. Navas, and Valentin Wüstholz. Automated safety verification of programs invoking neural networks. In *Computer Aided Verification - 33rd International Conference*, ***CAV 2021***.

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SELECTED RESEARCH PROJECTS

COMPILING WITH GENERATING FUNCTIONS ICFP 2025

- Geni: A compiler that compiles functional programming–style probabilistic programs into probability-generating functions, a compact and exact compilation target representing measures.

COMPILING PROBABILISTIC PROGRAMS FOR VARIABLE ELIMINATION WITH INFORMATION FLOW PLDI 2024

- Mappl: A compiler that enables scalable inference by factorizing recursive probabilistic programs via information-flow typing.

TYPE-PRESERVING, DEPENDENCE-AWARE GUIDE GENERATION FOR SOUND, EFFECTIVE AMORTIZED PROBABILISTIC INFERENCE POPL 2023

- Fidelio: Symbolic methods (a type system and an analysis) aid in neural-network-based inference.

ANALYZING DEEP NEURAL NETWORKS WITH SYMBOLIC PROPAGATION: TOWARDS HIGHER PRECISION AND FASTER VERIFICATION SAS 2019

- Propose a novel symbolic propagation method improving abstract interpretation for DNN analysis.
- Bring benefits of up to 549% speedup (9.16h → 1.41h) to a state-of-the-art SMT-based verifier.

INDUSTRY EXPERIENCE

NUAAX.COM | Co-Founder + iOS Developer
Apr. 2015 – Sep. 2017 | Nanjing, China
Apps avaliable on Apple App Store (served 55,000+ users in the first three years): I co-founded a non-official team and developed apps that help students register for courses, access timetables and grades, and connect with each other.

AWARDS

2023	Type 1	David R. Cheriton Graduate Scholarship
2021	Entrance	University of Waterloo Entrance Scholarship
2020	National	China National Scholarship (Top 0.2%)
2020	First-Class	Academic Scholarships of Institute of Software Chinese Academy of Sciences (Top 10%)
2019	First-Class	Academic Scholarships of Institute of Software Chinese Academy of Sciences (Top 10%)
2015	**Silver Medal**	ACM-ICPC Shanghai Metropolitan Programming Contest
2014	**Silver Medal**	ACM-ICPC Asia Regional Contest AnShan Site
2014	National	China National Scholarship (Top 0.2%)
2014	Winning Prize	RoboCup China Open Soccer Simulation 2D