

朱淑芳 Shufang Zhu

EDUCATION

East China Normal University	<i>Shanghai, China</i>	<i>Feb.2018 – Present</i>
PhD in Software Engineering; Advised by Moshe Y. Vardi and Geguang Pu		
Rice University	<i>Houston, TX</i>	<i>Aug.2016 – Feb.2018</i>
Visiting PhD in Software Engineering; Advised by Moshe Y. Vardi and Geguang Pu		
East China Normal University	<i>Shanghai, China</i>	<i>Sep.2014 - Aug.2016</i>
PhD in Software Engineering; Advised by Geguang Pu		
East China Normal University	<i>Shanghai, China</i>	<i>Sep.2010 – Jun.2014</i>
BE in Software Engineering		

PUBLICATIONS

- First-Order vs. Second-Order Encodings for -to-Automata Translation.
Shufang Zhu, Geguang Pu, Moshe Y. Vardi **TAMC2019**
- SAT-based explicit LTL reasoning and its application to satisfiability checking.
Jianwen Li, **Shufang Zhu**, Geguang Pu, Lijun Zhang, Moshe Ym Vardi. **FMSD2019**
- An Explicit Transition System Construction Approach to LTL Satisfiability Checking.
Jianwen Li, Lijun Zhang, **Shufang Zhu**, Geguang Pu, Moshe Y. Vardi, Jifeng He. **Form Asp Comp 2018**
- A Symbolic Approach to Safety LTL Synthesis.
Shufang Zhu, Lucas M. Tabajara, Jianwen Li, Geguang Pu and Moshe Y. Vardi. **HVC2017**
- Symbolic LTLf Synthesis.
Shufang Zhu, Lucas M. Tabajara, Jianwen Li, Geguang Pu and Moshe Y. Vardi. **IJCAI2017**
- Safety Model Checking with Complementary Approximations.
Jianwen Li, **Shufang Zhu**, Yueling Zhang, Geguang Pu, Moshe Y. Vardi. **ICCAD2017**
- SAT-Based Explicit LTL Reasoning.
Jianwen Li, **Shufang Zhu**, Geguang Pu and Moshe Y. Vardi. **HVC2015**

RESEARCH and PROJECT EXPERIENCE

- LTLf Synthesis with Fairness and Stability Assumptions** *Nov.2018– Sep.2019*
Mentor: Prof. Moshe Y. Vardi & Prof. Geguang Pu *ECNU*
- Developed a nest fixpoint-based algorithm for solving the problem of synthesis of LTLf under fairness and stability assumptions
 - Implemented a BDD-based symbolic Safety LTL synthesis tool
 - This tool outperforms extant general LTL synthesis tools (Paper accepted to AAAI2020)
- On the Power of Automata Minimization in Temporal Synthesis** *Feb.2018– present*
Mentor: Prof. Moshe Y. Vardi & Prof. Geguang Pu *ECNU*
- Evaluated the significance of DFA minimization in LTLf synthesis
- C++ Unit Verification Framework** *June.2018– August.2018*
Mentor: Ming Fu & Xin Gao *Huawei, Shanghai*
- WP (Weakest Precondition) computation of a given program via Coq (interactive theorem prover)

- Simplified the WP represented by Coq terms and translated to SMTlib for subsequent process

Multi-encoding of LTLf

Sep.2017– Jan.2019

Mentor: Prof. Moshe Y. Vardi & Prof. Geguang Pu

LAPIS, Rice University

- Explored different encodings of LTLf formula to automata construction
- Showed FOL encoding outperforms MSO, provided a potential optimization of MSO encoding (Paper published at TAMC2019)

Symbolic Safety LTL Synthesis

Feb.2017– Sep.2017

Mentor: Prof. Moshe Y. Vardi & Prof. Geguang Pu

LAPIS, Rice University

- Explored symbolic techniques for synthesis of Safety LTL, a syntactic fragment of LTL
- Implemented a BDD-based symbolic Safety LTL synthesis tool
- This tool outperforms extant general LTL synthesis tools (Paper published at HVC2017)

Symbolic LTLf Synthesis

Aug.2016 - Feb.2017

Mentor: Prof. Moshe Y. Vardi & Prof. Geguang Pu

LAPIS, Rice University

- Explored symbolic techniques for synthesis of Linear Temporal Logic over finite traces, or LTLf
- Implemented the first LTLf synthesis tool, using both symbolic and explicit techniques, and showed that the symbolic method outperforms the explicit one
- This tool outperforms extant general LTL synthesis tools (Paper published at IJCAI2017)

Hardware Model Checking

Sep.2014 – Aug.2016

Mentor: Prof. Geguang Pu

ECNU

- Explored SAT-based model checking techniques using Minisat and MUC
- Applied inductive SAT computation to safety model checking with complementary approximations (Joint-paper published at ICCAD2017)

AWARDS

IJCAI Travel Grant	2019
SIGLOG/VCLA Travel Award	2018
FLoC Travel Stipend	2018
Academic Scholarship	2015 to 2018 four consecutive years
Outstanding Student Scholarship	2011 to 2014 four consecutive years

TECHNICAL SKILLS

Programming Languages: C++, C, Python

ACTIVITIES

ATVA2015, YR-SETTA2017, ExCAP2017, IJCAI2017
 FLoC2018, WiL2018, FMAC2018, CONFESTA2018
 TAMC2019, ICST2019, IJCAI2019