

Denghang Hu

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Education

- **Institute of Software, Chinese Academy of Sciences** 2019–2026
Ph.D. in Computer Science, advised by [Zhilin Wu](#)
- **University of Chinese Academy of Sciences** 2015–2019
B.S. in Computer Science

Publications (Asterisks indicate primary authors; alphabetical order denotes equal contribution.)

- [1] Taolue Chen, Alejandro Flores-Lamas, Matthew Hague, Zhilei Han, **Denghang Hu**, Shuanglong Kan, Anthony W. Lin, Philipp Rümmer, and Zhilin Wu, “Solving string constraints with Regex-dependent functions through transducers with priorities and variables”, *POPL*, 2022.
- [2] **Denghang Hu***, Zhilin Wu, “An efficient string solver for string constraints with regex-counting and string-length”, *JSA*, 2025.
- [3] **Denghang Hu***, Taolue Chen, Philipp Ruemmer, Fu Song, Zhilin Wu, “Decision Procedures for A Theory of String Sequences”, *APLAS*, 2025.
- [4] **Denghang Hu***, Zhilin Wu, “String Constraints with Regex-Counting and String-Length Solved More Efficiently”, *SETTA*, 2023.
- [5] Taolue Chen, Matthew Hague, Jinlong He, **Denghang Hu**, Anthony Widjaja Lin, Philipp Rümmer, and Zhilin Wu, “A Decision Procedure for Path Feasibility of String Manipulating Programs with Integer Data Type”, *ATVA*, 2020.
- [6] Parosh Aziz Abdulla, Mohamed Faouzi Atig, Yu-Fang Chen, Bui Phi Diep, Lukáš Holík, **Denghang Hu**, Wei-Lun Tsai, Zhilin Wu Di-De Yen, “Solving Not-Substring Constraint with Flat Abstraction”, *APLAS*, 2021.
- [7] Matthew Hague, **Denghang Hu**, Artur Jež, Anthony W. Lin, Oliver Markgraf, Philipp Rümmer, Zhilin Wu, “OSTRICH2: Solver for Complex String Constraints”, *FMCAD*, 2025.

Research

My research focuses on solving string and sequence constraints. More specifically, I aim to develop scalable decision procedures for string and sequence constraints by combining automata-based techniques with SMT-based reasoning. Existing solvers rely heavily on heuristics when handling strings, integers, and sequence operations, which limits both completeness and effectiveness. My research develops decidable frameworks that bridge this gap, implement the corresponding theoretical algorithms in practical solvers, and apply these solvers to program analysis and symbolic execution.

Teaching Experience

- Discrete Mathematics — Teaching Assistant, Spring 2020

Projects

- [OSTRICH](#), Open Source Project, Developer (2019–2025): An automata-based SMT solver for string constraints.
- JavaScript Taint Analysis Frontend, Huai Wei, Main Developer (2020–2021): Implement the engine’s front-end translation module so it can convert JS, TS, and Vue code into DL-IR.

Talks & Presentations

- Paper Presentations (talk), ATVA 2020, SETTA 2023, APLAS 2025.
- Poster Presentations, Institute of Software, 2020, 2022, 2023.
- Invited talk, “Cost-Enriched Automaton and Its Application”, University of Regensburg, 2024.
- Invited talk, “Solving String Constraints with Integer Data Type”, Institute of Software, 2025.

Reviewing

Provided reviews for TACAS, TCS, ATVA, SETTA.