

Yu-Wei Fan

@ r11943096@ntu.edu.tw | 📍 Taipei, Taiwan

RESEARCH INTERESTS

QBF/SAT solving, formal verification, model checking, electronic design automation (EDA)

EDUCATION

National Taiwan University

BS in Electrical Engineering; GPA: 4.03/4.3

MS in Electronics Engineering; GPA: 4/4.3

Taipei, Taiwan

Sep 2018 – Jun 2022

Sep 2022 – Jun 2024 (Expected)

RESEARCH EXPERIENCES

Applied Logic and Computation Lab

Research Assistant

Taipei, Taiwan

Jun 2020 – Present

- Developed a **state-of-the-art stochastic Boolean satisfiability (SSAT) solver** SharpSSAT with strategy-generation capability.
- Proposed **polynomial-rewriting and symbolic regression approaches** to tackle the problem of **retrieving high-level arithmetic information from gate-level netlist**.
- Proposed a **new logical formalism SSAT(Θ)**. Demonstrated its potential applicability through developing an **SSAT(Θ) solver** and formulating the **encodings of probabilistic model-checking** problems.

Institute of Information Science, Academia Sinica

Adjunct Research Assistant

Taipei, Taiwan

Feb. 2022 – Feb. 2023

- Explored **neural network testing using concolic testing** approach

PUBLICATIONS

1. **Yu-Wei Fan**, Jie-Hong Roland Jiang. “SharpSSAT: A Witness-Generating Stochastic Boolean Satisfiability Solver” in *Proc. of the AAAI Conference on Artificial Intelligence (AAAI-23)*
2. Kuo-Wei Ho, Shao-Ting Chung, Tian-Fu Chen, **Yu-Wei Fan**, Che Cheng, Cheng-Han Liu, Jie-Hong Roland Jiang. “WolFEx: Word-Level Function Extraction and Simplification from Gate-Level Arithmetic Circuits” in *Proc. of the International Conference on Computer-Aided Design (ICCAD-23)*
3. **Yu-Wei Fan**, Jie-Hong Roland Jiang. “Unifying Decision and Function Queries in Stochastic Boolean Satisfiability” (Under review at AAAI-24)

SKILLS

Programming: C/C++, Python, Verilog, \LaTeX

Languages: GRE: 161/168/3.5 (329/3.5) , TOEFL: 29/27/25/23 (104)

WORK EXPERIENCE

Switching Circuits and Logic Design, National Taiwan University

Teaching Assistant

Taipei, Taiwan

Sep. 2022 – Feb. 2023

Introduction to Electronic Design Automation, National Taiwan University

Teaching Assistant

Taipei, Taiwan

March. 2023 – June. 2023

Institute of Information Science, Academia Sinica

Adjunct Research Assistant

Taipei, Taiwan

Sep. 2022 – Feb. 2023

AWARDS & ACHIEVEMENTS

- Research Grant for University Students, Ministry of Science and Technology
- International Conference Travel Grant for Graduate Students, National Science and Technology Council
- Outstanding Students Conference Travel Grant, Foundation for the Advancement of Outstanding Scholarship

RELEVANT COURSEWORK

Major coursework: Logic Synthesis and Verification, System-on-Chip Verification, Physical Design, Machine Learning, VLSI Testing, Automated Formal Verification

Minor coursework: Algorithms, Microelectronics