

# Yu-Wei Fan

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## RESEARCH INTERESTS

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

## EDUCATION

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### 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

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### 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( $\Theta$ )**. Demonstrated its potential applicability through developing an **SSAT( $\Theta$ ) 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

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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)

## AWARDS & ACHIEVEMENTS

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- 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

## WORK EXPERIENCE

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### 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*