

Kaixin Yang

✉ kaixinya@usc.edu · ☎ +1 (213) 284-6958

Education

**Viterbi School of Electrical and Computer Engineering, University of Southern California
Los Angeles, CA 90007, U.S.**

Sept.2019 – Present

Ph.D. student in Computer Engineering

**Viterbi School of Electrical and Computer Engineering, University of Southern California
Los Angeles, CA 90007, U.S.**

Sept.2019 – May.2021

M.S. in Electrical Engineering

**School of Electronics Engineering and Computer Science, Peking University
Beijing, China**

Sept.2015 – Jul.2019

B.S. in Electronic and Information Science and Technology

Research Experience

Research on Hardware Security and Sequential Logic Encryption

Aug.2019 – Present

Advisor: Prof. Pierluigi Nuzzo

Affiliation: Cyber-Physical System Design Group

- Systematically summarized the assumptions and metrics of current sequential logic attack methods.
- Evaluated several sequential logic encryption methods, proposed potential strategies to attack on sequential logic encryption methods, developed an unrolling-based SAT attack and compared with existing methods in literature.
- Explored retrieving keys from locked netlists using graph neural network.

Research on Satellite Communication System and Network

Oct.2017 – May.2019

Advisor: Prof. Na Yi

Affiliation: Institute of Advanced Communications

- Did a literature review of distributed relational databases and examined the feasibility of one highly-reliable distributed relational database Tencent's PhxSQL.
- Helped design a distributed storage scheme for the satellite communication system and simulate satellite communication channel.
- Explored the way to implement database applications on the GPU platform with OpenCL.

Publication

- Hu, Y., Yang, K., Nazarian, S. and Nuzzo, P., 2020. SANS-Crypt: A Sporadic-Authentication-Based Sequential Logic Encryption Scheme. VLSI-SoC 2020. (*published*)
- Hu, Y., Yang, K., Chowdhury, S. and Nuzzo, P., 2020. Risk-Aware Cost-Effective Design Methodology for Integrated Circuit Locking. DATE 2021. (*published*)
- Hu, Y., Zhang, Y., Yang, K., Chen, D., Nuzzo, P., Beerel, P., 2021. Fun-SAT: Functional Corruptibility-Guided SAT-Based Attack on Sequential Logic Encryption. HOST 2021. (*accepted*)
- Chowdhury, S., Yang, K., Nuzzo, P., 2021. ReIGNN: State Register Identification Using Graph Neural Networks for Circuit Reverse Engineering. ICCAD 2021. (*accepted*)

Honor and Award

- 2019 Annenberg Fellowship
- 2018 Excellent Presentation in The Sixth Peking University Young Scientists Symposium on Informatics
- 2018 Third Prize in 2018 Intel Cup Undergraduate Electronic Design Contest
- 2017 Award for Academic Excellence of Peking University in academic year
- 2017 Level 3 in National Computer Rank Examination
- 2016 First Prize in College Physics Contest awarded by Beijing Physics Society in year 2016

Skill

Programming Languages: Verilog, Python, C++, C

Softwares & platforms: Synopsys, Cadence, MATLAB, LaTeX, Linux

Languages: Chinese(Native), English(Proficient)

Standard English Test: TOEFL 102 (R27, L27, S20, W28); GRE 323 (V153, Q170, W3.5)