# Yifei Gao

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### **EDUCATION**

#### Texas A&M University

Master of Computer Science

• Overall GPA: 3.7/4.0

• **Courses:** Advanced Operating System, Compiler Design, Networks and Distributed Processing, Software Engineering, Software Reverse Engineering, Analysis of Algorithms, Software Security

### Shanghai Jiao Tong University

Bachelor of Information Engineering

- Overall GPA: 3.42/4.3
- Standardized tests: TOEFL 107(S22);GRE 327+3.0(V158,Q169)
- Core Courses(Selected): Thinking and Approach of Programming (C++)(85), Discrete Mathematics(99), Circuits Theory(93), Probability and Statistics(94), Data Structure and Algorithms(86), Analog Electronic Engineering(91), Embedded System(91), Fundamentals of Communication Circuits(93)

### **RESEARCH EXPERIENCE**

### Automated Vulerability Detection for Solana Smart Contracts

Research Assistant

- Participated development of a dataflow analysis framework for Solana smart contracts based on Rust Midlevel IR.
- Conducted evaluation on 10+ real world Solana projects and found 12 vulnerabilities.
- Paper accepted by ACM CCS 2022

### Race Condition Detection on Smalltalk code

#### Research Assistant

- Participated in design and implementation of a Smalltalk compiler frontend based on the LLVM framework.
- Participated in design and implementation of a Smalltalk static analysis and race detection tool using pointer analysis.
- Paper in submission of ICSE 2023

# **Research on Relation Extraction and Prediction Based on Massive Data** Sept 2019 - Jun 2020 *Undergraduate Thesis*

- Summarized some popular models of graph neural network and their usage in relation extraction, and reproduced some of them.
- o Mitigated graph methods from English text to Chinese and got similar performance using ACE2005 dataset.

### Practice research on P2P botnet and its detection

Research Assistant

- Reviewed discovered communication mechanism of some Peer-to-Peer botnets and implemented a small-size botnet without spreading ability.
- Developed a P2P botnet honeypot that can detect P2P botnets with encrypted network traffic

## ACADEMIC PROJECTS

### **Reliable Data Transfer Client**

Independent Developer

College Station, USA Sep 2020-

> **Shanghai, China** Sep 2016-Jun 2020

Nov 2021 - May 2022

Nov 2020

Jan 2021 - Nov 2021

May 2018 - Apr 2019

- Developed Real data transfer client by Visual C++ in a producer-consumer structure.
- Implemented several TCP features to the client, including cumulative ACKs, fast retransmit and flow control.
- Survived high packet loss and achieves high transmission speed, getting full marks in this project.
  Native DNS resolver
  Oct 2020

### Independent Developer

- Manipulated Windows UDP socket in C++ to implement recursive DNS lookup function and response parsing.
- Implemented mal-formed packets detection besides basic DNS function.

# Chinese College Student Information Security ContestApr 2019 – Jul 2019Team MemberTeam Member

- Joined a group with 6 members and take CTF reverse engineering and cryptography as interest.
- Mastered techniques in Linux programs reversing and cryptography attacks about cipher including RSA, DES, etc.

Apr 2019 - Jun 2019

Course Project

• Won Second Prize in the finals, ranking 58/1181 teams across the nation.

### Phase-Lock Based FM Communication System Development Team Leader

- Designed related parameters of a communication circuit based on technique of carrier-tracking phase lock loop, having the function of FM modulation and demodulation and is able to process both analog and digital signals.
- Implemented the circuit on PCB and added external devices, enabling the system to transmit music and voice signals.
- Curriculum design of Fundamentals of Communication Circuits and got full marks.

### Skills

- Programming Languages: C/C++, Rust, Python, Assembly
- o Languages: Chinese, English
- Others: Latex, Linux, Git