

TIANYI LIU

435 Nagle St, College Station, Texas, USA

<https://liutianyi.site> tianyi@tamu.edu

EDUCATION

Texas A&M University

TX, USA

Advised by Yupeng Zhang and Juan Garay

Aug. 2021 - Expected July 2025

Shanghai Jiao Tong University

Shanghai, China

Bachelor of Engineering (BE) in Computer Science

Sept. 2016 - July 2020

Graduated from **ACM Class**, an elite CS program for top 5% of students.

PUBLICATIONS

zkCNN: Zero Knowledge Proofs for Convolutional Neural Network Predictions and Accuracy [pdf] [code]

Tianyi Liu, Xiang Xie, Yupeng Zhang.

(Accepted by CCS 2021)

Doubly Efficient Interactive Proofs for General Arithmetic Circuits with Linear Prover Time [pdf] [code]

Jiaheng Zhang, **Tianyi Liu**, Weijie Wang, Yinuo Zhang, Dawn Song, Xiang Xie, Yupeng Zhang.

(Accepted by CCS 2021)

RESEARCH EXPERIENCE

Crypto Group, Texas A&M University, Texas

TX, USA

Advised by Yupeng Zhang and Juan Garay on Cryptography

Aug. 2021 - Expected July 2025

- Mainly worked on **interactive zero knowledge proof** and its applications.

Crypto Group, University of California, Berkeley

CA, USA

Advised by Sanjam Garg on Cryptography

July 2019 - Dec. 2019

- Mainly worked on **identity-based lossy trapdoor function** and **n-KDM security**.

LATTICE Lab, Shanghai Jiao Tong University

Shanghai, China

Advised by Yu Yu on Cryptography

July 2018 - July 2020

- Mainly worked on **lattice-based homomorphic encryption**, **proof of sequential work**, and **PSI**.

WORK EXPERIENCE

Matrixelements

Shanghai, China

Algorithm Intern, supervised by Xiang Xie

June 2020 - July 2021

- Worked on the first track of **iDASH Privacy & Security Workshop 2020**, reached 93% accuracy in the final test and generate inferences for the testing dataset within only 1min.

- Published **two CCS papers** advised by Prof. Yupeng Zhang and Dr. Xiang Xie which are mainly related to zero knowledge proof.

HONORS AND AWARDS

Programming Competition

- **The Second Runner-up (3/255)** in The 2017 China Collegiate Programming Contest *Oct. 2017*

- **Champion (1/85)** in The 2017 Chinese Collegiate Programming Contest Woman Final *Mar. 2017*

- Bronze Medal in National Olympiad in Informatics (NOI) *July 2015*

SELECTED PROJECT

zkCNN [\[Github\]](#)

A ZKP implementation in C++.

2021

- An implementation of GKR-based zero-knowledge proof protocol for CNN model inference.
- Efficient enough to run a vgg16 instance in **less than 2mins**.

Hyrax-bls12-381 [\[Github\]](#)

An implementation of polynomial commitment in C++.

2021

- Based on [Hyrax](#) scheme defined on the field of BLS12-381.
- Especially for multilinear extension form that is very common in GKR-based zero-knowledge scheme.

MaStarCompiler [\[Github\]](#)

A compiler for a simplified C++ language in Java

2018

- Designed and implemented a compiler compiling M* language (a C++-and-java-like language) into NASM x86 assembly language using 6000 ~ 7000 lines in Java.
- Implemented features such as using ANTLR 4 as a parser tool to build AST, an self-defined IR, and optimizations based on static single assignment form.

TomRiVer [\[Github\]](#)

A Tomasulo-based CPU in Verilog

2018

- Implemented structures such as branch prediction, forwarding within 2 weeks.

TEACHING EXPERIENCE

Teaching Assistant of MS208 @ SJTU: Compiler Design and Implementation

Spring 2018 - 2019

Assistant Coach of The ACM-ICPC Team @ SJTU

2018 - 2019

SKILLS

Programming Languages: C++, Python3, Java, and Verilog

Tools: Github, L^AT_EX, Markdown