

Ziyang Song

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📍 Bochum, Germany

🌐 <https://chiron19.github.io>

Summary

Specializing in information security, privacy-preserving machine learning and applied cryptography, with also profiling mobile networks and signal processing, I have a solid research profile, engineering background and I am passionate about developing resilient, human-centered cybersecurity solutions against next-generation threats.

Education

Ruhr-Universität Bochum
Bochum, Germany

PhD Candidate Intern at Syssec Lab
Jan. 2026 - Mar. 2026

KTH Royal Institute of Technology
Stockholm, Sweden

M.Sc. Information and Network Engineering (2½ years) • GPA 4.6/5.0
Aug. 2022 - Jan. 2025

Track: Networked Systems | Degree Project: Privacy-preserving Machine Learning with Homomorphic Encryption among Multi-parties *Awarded Scholarship in 2025* | Technical Courses: Internetworking, Signal Theory, Networked System Security, Digital Communication, Queuing Theory & Teletraffic Systems, Wireless Networks, SDN & NFV, etc.

EPFL
Lausanne, Switzerland

Exchange, Computer Science (1 semester)
Aug. 2023 - Feb. 2024

Technical Courses: Machine Learning, Distributed Computing, Concurrent Algorithms, Intelligent Agents | Semester Project: Simple Network Emulator [Github>>](#)

Harbin Institute of Technology, Shenzhen
Shenzhen, China

B.Eng. Electrical and Information Engineering (3 years) • GPA 88.5/100
Aug. 2019 - Jun. 2023

Degree Project: Reinforcement Learning-based scheduling strategy for delay-sensitive tasks in IoT | Technical Courses: Information Theory, Mobile Communication, Digital Signal Processing, Image Processing, Biomedical Electronics, Electromagnetic Theory, Complex Variable Functions, Differential Equations, Convex Optimizations, etc. | Base Courses: Calculus, Linear Algebra & Geometry, Probabilities & Statistics, Signals & Systems, Computer Theory, Electronic Circuits, Physics, Simulations

Projects

5G Mobile Stack on OMNeT++

• Implementing simulated scenarios with Simu5G on user plane stack: PHY/MAC/RLC/PDCP with interactions of one or more UE / gnb

Jan. 2026 - Feb. 2026

Privacy-Preserving Machine Learning with Homomorphic Encryption

• Designed and implemented a multi-party ML framework using CKKS-based HE to enable **secure collaborative inference** without exposing raw data.
• Engineered **encryption and computation CNN pipelines** optimized for 32x32 RGB figure with acceptable inference latency, low computation resources and up to 90% accuracy. [Full Version Thesis >>](#)

Mar. 2024 - Dec. 2024

Simple Network Emulator

• Architected and developed a **plug-and-play distributed network emulator** on Ubuntu 22.04, enabling configurable multi-node topology simulation with arbitrary delay/connectivity matrices.
• Extended base UDP implementation with **full TCP protocol support**, improving function coverage by 85% and reducing debugging/reproduction time for network protocol experiments. [More >>](#)

Jun. 2023 - Jan. 2024

Software-Defined Networking & Network Function Virtualization

• Built a **virtualized multi-zone network topology** (public, DMZ, private) with SDN (POX controller, firewall) and NFV (IDS, load balancer, NAPT) components for scalable traffic management.
• Enhanced system security by integrating **intrusion detection rules** that detected and blocked 99% of simulated attack attempts. [More >>](#)

Apr. 2024 - Jun. 2024

Publications

Privacy-Preserving Convolutional Neural Networks Using Homomorphic Encryption: An Implementation of ResNet-20 on CIFAR-10 (NTMS 2025 Accepted)

Jun. 2025

Certifications

Huawei Sweden Hackathon

Downlink channel allocation problem | Final List

Dec. 2022

Computer System Development Capability Competition

Optimized compiler design & construction in C++ | National Third Prize

Jun. 2022

MCM/ICM COMAP

Problem C: Trading Strategies | Successful Participants

Feb. 2022

Software and Information Technology Competition

Algorithm programming contest in C++ | National Merit Prize, Provincial First Prize

Apr. 2021

Skills

C/C++

5+ years, familiar in up-to-date STL and common libraries

Python

3+ years, familiar in Pytorch, machine learning and data analysis

MATLAB

3+ years, focus on matrix algebra, signal processing and simulation

Java

Project implemented in course Intelligent Agents

Git

3+ years, familiar in git flow and version management

Webpage design

3+ years, familiar in HTML, CSS, JS and NodeJS module, delivered portfolio and landing page

Awards

ISSLS2000 for Degree Project

2025 **General Student Scholarship**

2024

SEMP Student Grant

2023 **Scholarship for Abroad Students**

2022

Scholarship for Undergraduates

2021 **Scholarship for New-admitted Undergraduates**

2019

Languages

English
Fluent, C2 Mastery

Chinese (Cantonese, Mandarin)
Native Speaker

Japanese
Intermediate, N3

Swedish
Intermediate, B1/B2 (SFI 3D)

French
Beginner, A1/A2