

# GUSTAVO FRANCO CAMILO

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## Summary

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I am a second-year Ph.D. student in Computer Science at Purdue University, co-advised by Prof. Aniket Kate and Prof. Kazem Taram. With over five years of research experience, I have published multiple papers and accumulated over 300 citations. I hold an M.Sc. in Electrical Engineering and a *cum laude* B.Sc. in Electronics and Computer Engineering from the Universidade Federal do Rio de Janeiro. I have years of experience in security and in programming large systems. My research interests span cybersecurity, focusing on privacy, distributed systems, and secure multi-party computation.

## Education

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### Purdue University

Jan. 2024 – Jan. 2029

*Doctor of Philosophy in Computer Science*

*West Lafayette, IN*

- Co-advised by Prof. Aniket Kate and Prof. Kazem Taram; Current GPA: 3.93
- Research mainly focused on hardware accelerated crypto
- Relevant coursework: Algorithms, Computer Networks, Cryptography, Advanced Cryptography, Distributed Systems, Principles of Computer Architecture, Network Security

### Universidade Federal do Rio de Janeiro

Nov. 2021 – Nov. 2023

*Master of Science in Electrical Engineering*

*Rio de Janeiro, Brazil*

- Completed with a 3.0/3.0 GPA
- Research mainly focused on cryptocurrencies, specifically on improving payment channel network (PCN) security and routing efficiency
- Relevant coursework: Computer Networks Security, Computer Networks

### Universidade Federal do Rio de Janeiro

Apr. 2017 – Nov 2021

*Bachelor of Science in Electronics and Computer Engineering*

*Rio de Janeiro, Brazil*

- Achieved cum laude honors, awarded to the top 5% of students
- Graduated one semester ahead of the expected schedule
- Completed an undergraduate final thesis titled "Secure, Distributed, and Automatic Data Sharing through Blockchain Technology," recognized among the top ten at the nation-wide Undergraduate Research Contest hosted by the Brazilian Computer Society
- Relevant Coursework: Algorithms and Data Structures, Programming Languages, C Programming, Digital Systems, Computer Architecture

## Experience

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### Purdue University

Jan 2024 – Present

*Graduate Teaching Assistant - CS252 Systems Programming*

*West Lafayette, IN*

- Taught core topics in systems programming, including Unix shell systems, inter-process communication, threading, memory allocation, shell scripting, and socket programming.
- Assisted students with debugging and implementing large systems.

### Purdue University

May 2024 – August 2024

*Graduate Research Assistant*

*West Lafayette, IN*

- Implemented a protocol that recovers from excessive faults in Byzantine Fault Tolerant consensus protocols, enhancing system resilience.
- Co-authored a research paper accepted for USENIX Security 2025 which showcases our implemented protocol's impact.

### Universidade Federal do Rio de Janeiro

November 2018 – November 2023

*Research Assistant*

*Rio de Janeiro, Brazil*

- Published over 10 papers in international conferences and journals.
- Wrote technical reports and presented work at international conferences and symposiums.

### Universidade Federal do Rio de Janeiro

February 2018 – November 2018

*Undergraduate Teaching Assistant - Programming 2*

*Rio de Janeiro, Brazil*

- Assisted students on C-programming lab projects and general good programming practices.

## Main Publications and Projects

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### Recover from Excessive Faults in BFT SMR

*Accepted to Usenix Security Symposium 2025*

October 2024

- Implemented (> 1,000 lines of code) a novel fault recovery protocol for BFT SMR in Rust and tested on a real-world setting using AWS.

### A Survey on Blockchain Scalability: From Hardware to Layer-two Protocols

*IEEE Communication Surveys and Tutorials*

March 2024

- Surveyed the recent efforts to improve blockchain scalability, focusing on the security and privacy of each proposal
- Journal Impact Factor: 34.4

### ProfitPilot: Enabling Rebalancing in PCNs through Profitable Cycle Creation

*IEEE Transactions on Network and Service Management*

January 2024

- Developed a network attachment strategy for payment channel networks that mitigates the impact of targeted topological attacks by over 17%
- Increased by over 2× the probability of nodes collecting routing fees and becoming profitable
- Implemented (> 1,500 lines of code) and tested the proposal using real data collected from the Lightning Network. Code available at <https://github.com/gFrancoCamilo/ln-looprebalance>

### PCNsim: A Flexible and Modular Simulator for Payment Channel Networks

*IEEE International Conference on Computer Communications (INFOCOM)*

May 2022

- Developed a payment channel network simulator that allows researchers to test multiple network topologies and workloads.
- More information and documentation available at <https://pcnsim.readthedocs.io>.
- Tool (> 7,000 lines of code) available at <https://github.com/gfrebello/pcnsim>

### A Secure Personal-Data Trading System Based on Blockchain, Trust, and Reputation

*IEEE International Conference on Blockchain (Blockchain)*

November 2020

- Developed a distributed system to secure and automate data trading using blockchain technology
- Code available at <https://github.com/GTA-UFRJ/blockchain-marketplace>

### DFedForest: Decentralized Federated Forest

*IEEE International Conference on Blockchain (Blockchain)*

November 2020

- Implemented a distributed system to secure the sharing of machine learning models while keeping sensitive data private using Hyperledger Fabric and sci-kit learning library. Conference acceptance rate: 16%
- Increased the accuracy of detecting unknown threats by 3% on average on a threat detection use-case application
- Code available at <https://github.com/GTA-UFRJ/DFedForest>

## Honors and Awards

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### Best Paper Award Runner-up

*Brazilian Computer Society*

2023

- Given by the Brazilian Computer Society for work published at the Brazilian Conference on Networks and Distributed Systems

### Cum laude distinction

*Universidade Federal do Rio de Janeiro*

2021

- Honor given to students who graduate within the expected schedule and with a GPA higher than 8.0

### Best Paper Award

*Brazilian Computer Society*

2019

- Given by the Brazilian Computer Society for work published at the Workshop on Blockchain of the Brazilian Conference on Networks and Distributed Systems

## Technical Skills

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**Languages:** Portuguese (native), English (Fluent - 118/120 on TOEFL-iBT), French (Beginner)

**Programming Languages:** Python, C/C++, Rust, Go, Scala, Perl, Lua, CUDA

**Technologies/Frameworks:** Linux, GitHub, Docker, Kubernetes, AWS, VS Code, Hyperledger Fabric, Apache Spark

## Availability

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May 12 - August 24