Iliya Mirzaei

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SUMMARY

Ph.D. student in Computer Science researching transaction-ordering attacks on consensus protocols. Built a Rust framework that benchmarks MEV across 7 production DAG-based Byzantine Fault Tolerant (BFT) protocols, resulting in a first-author SIGMOD 2027 paper. Brings 3+ years of experience shipping production software to 200K+ users and maintains an open-source macOS app with 2K+ GitHub stars and 125K+ downloads. Seeking Summer 2027 research internships in distributed systems, blockchain infrastructure, and consensus protocols.

EDUCATION

Ph.D. in Computer Science, Stony Brook University, Stony Brook, NY — Aug 2024 – May 2029 (Expected)

- GPA: 3.83/4.0. Advisor: Prof. Mohammad Javad Amiri. Research focus: distributed systems and consensus protocols.
- Relevant Coursework: Distributed Systems, Database Systems, Computer Networks, Data Visualization, Data Science.

B.Sc. in Computer Engineering, Iran University of Science and Technology (IUST), Tehran, Iran — 2019 – Feb 2024

- GPA: 3.79/4.0; top 10% of class at a top-4 national engineering university. Senior thesis: Fraud Detection SDK (graded 20/20).

PUBLICATIONS

Conference Papers

[C1] **Transaction Order Under Attack: Benchmarking MEV in DAG-based BFT Consensus Protocols. I. Mirzaei**, Z. Cai, C. Wu, M. J. Amiri. *ACM SIGMOD International Conference on Management of Data (SIGMOD)*, 2027. To appear.

Preprints

[P1] **Competition, Collusion, and Corruption: The Spectrum of MEV Attacks on DAG-Based BFT Consensus Protocols. I. Mirzaei**, H. Patel, C. Wu, M. J. Amiri. arXiv:2609.20069, 2026.

[P2] **Fair on the Surface: Transaction-Ordering Bias and MEV in Mysticeti DAG-based BFT Protocol. I. Mirzaei**, M. J. Amiri. arXiv:2607.13378, 2026. Code: github.com/iliyami/MEV

[P3] **EVAGE: Autonomous MEV Generation and Adaptation via Multi-Agent Harness.** Y. Wen, Z. Cai, **I. Mirzaei**, X. Cai, M. J. Amiri, H. Chen, C. Wu. arXiv:2609.27424, 2026.

[P4] **Sample More, Reflect Less: Self-Refine and Reflexion Lose to Repeated Sampling at Equal Token Cost, from 1.5B to 7B. I. Mirzaei**. arXiv:2607.28576, 2026.

[P5] **Stateless Network-Aware Adaptive Bitrate Streaming over IPFS. I. Mirzaei**, S. J. Mojaveri, A. Najafizadeh. arXiv:2606.29574, 2026.

Posters

[T1] **Fishing in Deeper Waters: A Comprehensive MEV Analysis of DAG-Based Blockchains. I. Mirzaei**, M. J. Amiri. *North East Database Day (NEDB Day)*, UMass Boston, 2026.

RESEARCH EXPERIENCE

Research Assistant, SeeMoRe Lab, Stony Brook University, Stony Brook, NY — Jan 2025 – Present

- Built a Rust benchmarking framework that attacks 7 production DAG-based BFT consensus protocols (Narwhal-Tusk, Bullshark, Mysticeti, MEVSUI, AlephBFT, Mahi-Mahi, Autobahn) using only protocol-compliant validator behavior, exposing transaction-ordering and MEV vulnerabilities.
- First-authored a SIGMOD 2027 paper [C1], 2 MEV preprints [P1, P2], and an NEDB Day 2026 poster [T1]; co-authored a multi-agent LLM system for automated MEV discovery [P3].
- Mentored a Simons Summer Research Fellow from onboarding to a published poster and co-authored preprint [P1] by scoping weekly milestones and teaching BFT consensus and the experimental tooling.

Research Assistant, Ethos Security & Privacy Lab, Stony Brook University, Stony Brook, NY — Sep 2024 – Dec 2024

- Developed machine learning security forensics tooling under Prof. Amir Rahmati that traces model failures, vulnerabilities, and attacks to their origin across model versions, training-data lineage, and update history.

Research Assistant, Data Science Lab, IUST, Tehran, Iran — Sep 2023 – Feb 2024

- Developed a cross-platform fraud detection SDK that reached 95% accuracy on 10K+ user interaction patterns.

PROFESSIONAL EXPERIENCE

Application Team Lead, AI Home Design, Remote (BC, Canada) Apr 2024 – Jul 2024

- Built the Android and iOS app from scratch in Flutter for an AI-powered home design platform with a global user base; led the cross-platform architecture, cutting development time by 40% versus separate native apps.
- Implemented real-time 60 fps rendering and integrated the app with the AI design backend services.

Software Engineer, Plates, Remote (Paris, France) Jul 2023 – Oct 2023

- Shipped the Android, iOS, and PWA chat feature for a peer-to-peer local food platform, integrating 4 Firebase services (Auth, Firestore, Cloud Messaging, Storage) for real-time messaging under 100 ms latency with zero critical production bugs.

Software Engineer, Vusic Nov 2022 – Jul 2023

- Built the iOS and PWA apps from scratch for the country's largest music streaming platform (200K+ users, 21K+ daily active users); profiling-driven optimization cut load time by 35% and memory usage by 25%.

Technical Lead, Flutter, Black Bit Sep 2021 – Nov 2022

- Led a team of 5 developers across 10+ client projects in health care, entertainment, and education with 98% on-time delivery.
- Cut deployment time from 4 hours to 15 minutes by building Fastlane CI/CD pipelines; shipped real-time communication and GPS tracking features.

PROJECTS

MacSai, Open-source Mac cleaner and security scanner (Swift, SwiftUI) github.com/iliyami/MacSai
Free, Apple-notarized alternative to CleanMyMac in Swift 6 and SwiftUI covering system cleanup, performance optimization, and malware scanning; 2K+ GitHub stars, 125K+ downloads, and top 2.3% of Homebrew casks.

MEV Arbitrage Bot, Sui blockchain Proprietary
Arbitrage bot that captures transaction-ordering opportunities on Sui, built on the Mysticeti consensus protocol and Sui's transaction lifecycle.

Linear PBFT Banking System, Stony Brook University (Python) github.com/iliyami/PBFT
Byzantine fault-tolerant banking system using Linear PBFT state machine replication; ranked #1 in class on performance and correctness (2025).

Multi-Paxos Banking System, Stony Brook University (Python) github.com/iliyami/Multi-Paxos
Replicated banking system using Multi-Paxos, evaluated on the SmallBank benchmark; ranked #1 in class on performance and correctness (2025).

Telescope, Adaptive bitrate proxy for IPFS (Go) github.com/iliyami/telescope
Cache-aware adaptive bitrate streaming proxy built as stateless Go Fiber microservices with Prometheus metrics and OpenTelemetry tracing; published as [P5].

TEACHING EXPERIENCE

Teaching Assistant, Stony Brook University and IUST Sep 2021 – Present

- CSE 316 Software Development (Stony Brook University): supported 120+ students per semester and conducted 130+ technical interviews.
- Software Engineering, Database Design, and Programming (IUST): mentored 50+ students.

TECHNICAL SKILLS

Languages:	Rust, Go, Python, C, C++, Java, C#, Dart, Swift, JavaScript, SQL
Distributed Systems:	BFT Consensus (Mysticeti, Bullshark, PBFT), Multi-Paxos, State Machine Replication, Blockchain, MEV Analysis
Systems & DevOps:	Linux, Linux Kernel, Docker, RabbitMQ, Nginx, Prometheus, OpenTelemetry, Fastlane, CI/CD, Git
Databases:	PostgreSQL, MySQL, SQL Server, MongoDB, Neo4j, Firebase Firestore
Frameworks:	Flutter, SwiftUI, FastAPI, REST APIs, Progressive Web Apps (PWA), D3.js, .NET, Firebase
AI & LLMs:	LLM Evaluation, Test-Time Compute, Multi-Agent LLM Systems, Claude Code

HONORS AND AWARDS

- Ranked 261 of 164,278 (top 0.2%) in the national university entrance exam, 2019.
- Qualified for direct Master's admission (top 10% of class), IUST, 2023.
- Best Project Awards, Linux Kernel Development and Mobile Networks courses, IUST, 2023.
- Graduate of NODET (National Organization for Development of Exceptional Talents), 4.0/4.0 GPA.