

Hesam Sarkhosh

FULL-STACK SOFTWARE ENGINEER

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SUMMARY

Full-stack software engineer with 6+ years shipping production systems, mostly in fintech: crypto exchanges, trading interfaces, and a DeFi neobank. My core stack is **Node.js** and **React** with TypeScript end to end, and I work across the whole system: system design and microservice architecture, database design, scaling and query optimization, and distributed systems, along with the DevOps and deployment work that keeps them running at scale, plus data pipelines and big-data processing on Spark and data lakes. A generalist by instinct and a strong problem solver, I have led engineering teams and delivered just as well on my own. Currently completing an MMath in Computer Science at the University of Waterloo, where my research is in financial fraud detection and anti-money-laundering for Web3 and DeFi; my thesis systematizes crypto money-laundering schemes and the countermeasures against them, with a first-author paper at eCrime 2025.

SKILLS

Languages	TypeScript / JavaScript, Go, Python, Java, SQL, C, Solidity
Front-End	React, Next.js, React Native, Redux, React Query, TailwindCSS, HTML5/CSS3
Back-End & APIs	Node.js, Express, GraphQL (Apollo), REST, gRPC, WebSockets, RabbitMQ, Kafka
Databases	PostgreSQL, MySQL, MongoDB, Redis; schema design, indexing, sharding, replication, query optimization
Architecture & Systems	System design, microservices, API gateways, event-driven & distributed systems, caching, consensus & replication, scalability & performance
Data & Big Data	Data pipelines & ETL, Apache Spark, Kafka streaming, data lakes, Pandas / NumPy
DevOps & Cloud	Docker, Kubernetes, CI/CD, AWS, GCP, Azure, Vercel, monitoring & scaled deployment
Engineering Practice	OOP/FP, design patterns, TDD/DDD, code review, Agile/Scrum, technical leadership & mentoring, AI-assisted development (Claude Code, Codex, MCP)

PROFESSIONAL EXPERIENCE

ether.fi

George Town, Cayman Islands / Toronto, ON

SOFTWARE ENGINEER (CO-OP)

Sep 2025 – Apr 2026

A non-custodial DeFi neobank, a leading liquid-restaking protocol and crypto-backed card platform.

- Shipped end-to-end product features in the ether.fi web application, from API to UI: the main **Assets page** (a user's holdings, balances, and per-asset details), multiple **marketing campaigns** with their banners and promotional flows, and **admin-portal features** from views and handlers to API integration.
- Built and maintained internal-facing interfaces: the administration console, support-staff tooling, and the

fraud surveillance dashboard the operations team investigates cases in; part of the team that launched the MEXC co-branded card product.

- Owned fraud-detection systems alongside product work: led the 0-to-1 integration of the Sardine behavioral-risk platform, and engineered velocity rules, graph-based account clustering, and pattern matching that cut a coordinated cashback-farming attack from ~\$50K/day to under \$1K/day.
- Prototyped LLM-driven anomaly detection over transaction sequences; worked daily with compliance and operations partners to turn requirements into shipped features.

Communere Ltd. (engaged exclusively with Agxio Ltd.)

Guildford, UK (Remote)

FULL-STACK SOFTWARE ENGINEER

Oct 2021 – Dec 2024

- Technical architect and lead developer for 3+ years, directly leading a team of 4 engineers; owned front-end architecture and the dashboard interfaces across the product suite, alongside the backend services beneath them.
- **Report Generator:** designed and built a standalone Next.js/React microservice that renders PDF reports from headless-CMS content using Puppeteer and headless Chromium, automating report generation for the Galen platform.
- **Galen:** microbiome analysis platform: React/TypeScript front-end and dashboards, Node.js/GraphQL APIs, delivered end to end from schema to UI.
- **Ceres / MySkinDoctor / AskApollo / AskDataScientist:** built the front-end and dashboard interfaces for an IoT sensor-streaming SaaS, an ML dermatology tool (React + Node/GraphQL), a LLaMA-based knowledge-base chatbot, and a GPT-powered text-to-SQL interface.
- **Microservice Core:** foundational microservice platform with global authentication on Go, PostgreSQL, Apache APISIX, and RabbitMQ; database performance work with RBC Brewin Dolphin during a partnership phase.

Octal Software and Trade Inc.

Istanbul, Turkey / Tehran, Iran

FULL-STACK SOFTWARE ENGINEER

Oct 2020 – Oct 2021

- Built core systems for octalbit.com, a Binance-inspired cryptocurrency exchange for the Turkish market.
- **Spot Market UI:** implemented the spot-trading page in React/TypeScript: live order books, trade history, and order entry driven by real-time WebSocket feeds.
- **TradingView integration:** customized the TradingView charting library for the exchange and contributed an upstream fix for a low-timeframe candlestick bug, merged into TradingView's public repository.
- **Matching Engine v2.0:** designed and built a low-latency Go order-matching microservice using splay trees, achieving a 90%+ throughput improvement over the legacy Node.js engine; also implemented an HD-wallet key-management microservice.

EDUCATION

University of Waterloo

Waterloo, ON, Canada

MMATH IN COMPUTER SCIENCE (THESIS-BASED)

May 2024 – Sep 2026

- GPA 3.7/4.0. Research focus: fraud detection / anti-money-laundering in Web3 & DeFi. Supervisor: Prof. Diogo Barradas.
- Awards: International Master's Award of Excellence (IMAE) & CrySP Top-up funding.
- Coursework: Consensus Protocols & Blockchains (91); Software Engineering for Big Data & AI (95).

Amirkabir University of Technology

Tehran, Iran

B.SC. IN COMPUTER SCIENCE

Sep 2018 – Feb 2023

- GPA 3.7/4.0. Top 0.2% nationally (among 144,437) in the Iranian university entrance exam.
- Thesis: a cross-platform non-custodial crypto-wallet (React Native) with a novel BIP39 master-seed generation approach.

OPEN SOURCE

- **Functional Hooks Library**  : reusable, typed React hooks published on NPM (TypeScript).
- **Crypto-wallet** : cross-platform non-custodial wallet in React Native with novel BIP39 master-seed generation.
- **Web Scraper** : headless-Chromium scraping tool (TypeScript/Node.js).
- **Reverse Proxy / API Gateway** : JWT-authenticated gateway (TypeScript/Node.js).
- **School Admin API** : email notification and admin system for schools (Go).
- **TradingView**: upstream bug fix for candlestick rendering on low timeframes, merged into the public repository.

PUBLICATIONS

- **H. Sarkhosh**, U. Maroof, and D. Barradas. “The Dark Art of Financial Disguise in Web3: Money Laundering Schemes and Countermeasures.” In *Proc. 20th Annual APWG Symposium on Electronic Crime Research (eCrime)*, 2025. (*First author.*)
- **H. Sarkhosh**. “Inside the Crypto Laundering Machine: A Taxonomic Study of Crypto Money Laundering Schemes and Countermeasures.” MMath thesis, University of Waterloo, 2026 (*submitted*).

ACADEMIC EXPERIENCE

Graduate Teaching Assistant, University of Waterloo

2024 – 2026

CS 459/698 Security & Privacy (designed assignments & final exam; guest lecture on blockchain security); CS 231 Algorithmic Problem Solving; CS 246E Object-Oriented Software Development; CS 116 Intro to CS.

Undergraduate Teaching Assistant, Amirkabir University of Technology

2019 – 2022

Web Programming (React/TypeScript); Advanced Programming (OOP/Java).

LANGUAGES

English: Fluent (Academic IELTS 7.5: L 8, R 8, W 7, S 7; Oct 2022) • **Persian:** Native.