

# Abolfazl Babamohammadi

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## Professional Summary

Senior Software Engineer with 10+ years of experience in designing and developing highly specialized software systems as a sole engineer. Proven track record of delivering end-to-end solutions across various domains, including high-frequency crypto trading bots, hardware/IoT integrations, complex physical security platforms, DRM systems, and enterprise accounting platforms. Expert in Python (FastAPI, Flask) and Golang, with strong proficiency in asynchronous task management, message brokers (RabbitMQ, MQTT), and modern front-end frameworks (NextJS, Vue.js).

## Technical Skills

**Languages & Backend:** Python (FastAPI, Flask), Golang, C/C++/C# (Concepts).  
**Frontend & Desktop:** Next.js, Vue.js, Tailwind CSS, ShadCN, PyQt, Windows Applications.  
**Databases & Brokers:** PostgreSQL, MongoDB, Redis, RabbitMQ, Celery.  
**IoT & Protocols:** MQTT, ONVIF (IP Cameras), Serial Protocol, WebSockets, HTTPS, REST APIs.  
**Infrastructure & Security:** Docker, DRM Architecture, Anti-Reverse Engineering, RAM Decryption.

## Professional Experience & Key Projects

### • Senior Software Engineer (Sole Developer)

*Project: BingX Crypto Futures Trading Bot*

*Startup*

- Engineered an automated futures trading bot for BingX exchange, capable of executing trades based on external webhooks from TradingView and manual frontend signals.
- Developed the core backend using Python, FastAPI, and MongoDB, utilizing Celery and RabbitMQ for asynchronous task execution and Redis for data caching.
- Built a responsive manual trading interface and dashboard using NextJS.

### • Lead Full-Stack Developer (Sole Engineer)

*Project: Startup E-Commerce Marketplace*

- Architected and deployed a comprehensive marketplace platform from scratch to production.
- Built a robust backend using Python and FastAPI, with PostgreSQL for relational data, and implemented asynchronous processes using Celery and RabbitMQ.
- Developed a modern, user-friendly frontend using NextJS, Tailwind CSS, and ShadCN.
- Containerized the entire application stack using Docker and successfully deployed it on a production server.

### • Backend Engineer (Golang)

*Project: Hardware-to-Server Serial Communication System*

- Developed a highly efficient Golang-based software to interface with 50 custom-manufactured hardware devices.
- Implemented low-level Serial protocol communication to read smart card data and transmit it securely to a central server.

### • Software Engineer (Sole Developer)

*Project: Enterprise RFID Accounting & Kiosk System*

- Designed a complete organizational welfare accounting system handling service deductions via RFID cards, currently supporting 2,000 active users with a 6-year operational uptime.
- Built the central backend API using Python and Flask, with a Vue.js web interface for administration.
- Developed the client-side kiosk software using Python and PyQt.
- Integrated hardware-backend communication via MQTT and HTTPS protocols.

### • Software Engineer (Sole Developer)

*Project: Hospital HIS Integration & Lab Delivery System*

- Developed a software solution integrating directly with a hospital's HIS (Hospital Information System) to fetch patient lab results in real-time.
- Automated patient notifications via SMS upon result readiness and provided a secure portal for online result retrieval.
- Implemented a barcode/QR validation system to authenticate lab results (widely utilized during the COVID-19 pandemic for verification).

- Maintained over 4 years of continuous operational uptime, successfully processing and archiving approximately 70,000 patient lab reports to date.
- **Backend Engineer (IoT/Security)**  
*Project: Smart Physical Security System*
  - Collaborated on a 5-board hardware security system, solely taking responsibility for the entire software architecture and backend development.
  - Developed a centralized server utilizing Python, Flask, Celery, and a Vue.js frontend to aggregate, analyze, and report data from remote physical sensors.
  - Integrated the ONVIF protocol to automatically interface with IP cameras, capturing visual data from environments where sensors detected anomalies.
- **Software Engineer (Desktop/Security)**  
*Project: Educational Video DRM & Anti-Piracy System*
  - Created a proprietary Digital Rights Management (DRM) solution for an educational content creator (target audience: 7-18 years old) to prevent video piracy.
  - Developed two Windows applications: a Packager (for encrypting videos) and a Client Player.
  - Engineered a secure decryption mechanism that decrypts video files exclusively in the computer's RAM, paired with advanced compiler-level obfuscation to prevent reverse engineering.
- **Software Engineer (Desktop)**  
*Project: Natural Gas Network Calculation Engine*
  - Developed a Windows desktop application to calculate required natural gas consumption based on historical oil usage for urban and rural network planning.
  - Implemented parsers to ingest data via standard forms and ArcGIS files.
  - Produced standardized calculation outputs utilized by Gas Company network design engineers continuously for over 10 years.

## Education

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- **M.Sc in Information Security Engineering** Sep 2017  
*IRU International University*
- **B.Sc. in Software Engineering** Feb 2014  
*IAUM University*