

WORK EXPERIENCE

Software Engineer	Base.vn	Mar 2024- Present
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Base ID: Identity as a Service Platform

- **Authentication Server (OAuth 2.0 & OIDC):** Took a lead role in building and enhancing the central authentication server, ensuring security, standard compliance, and scalability.
 - Implemented standard-compliant OAuth 2.0 flows and OpenID Connect for secure token issuance.
 - Integrated SAML 2.0 protocol to enable Single Sign-On (SSO) for enterprise users from external Identity Providers.
 - Enhanced protocol security with countermeasures against CSRF, PKCE, DPOP, replay attacks, and ensured secure client secret storage. Rate limiting and account lockout policies to mitigate brute-force attacks.
 - Developed and integrated multiple verification methods for Multi-Factor Authentication (MFA), including the magic link, TOTP, SMS.
- **Centralized Authorization Service (via OpenFGA):** Leveraged OpenFGA (Google's Zanzibar implementation) to establish a centralized, fine-grained authorization system.
 - Developed the service responsible for writing relationship tuples to the OpenFGA API, ensuring permission data was consistently synced from our application.
- **Customer Identity & Access Management (CIAM):** Developed features for comprehensive customer identity administration.
 - Implemented APIs to manage the complete user and tenant lifecycle, tenant relationship from creation and updates to deactivation and deletion.
 - Built APIs and UIs for administrators to register client applications and verify organizational domains.
- **Real-time Multi-tenant Notification System:** Architected a high-performance system to address the challenge of delivering real-time alerts in a multi-tenant environment.
 - Designed an architecture using Server Sent Event and RabbitMQ to ensure low-latency, high-throughput delivery while maintaining strict data isolation between tenants.

Tech stack: Go Gin, GORM, Redis, PostgreSQL, Docker, JWT.

Base Talk: Peer to peer call and video conference

- **Real-time Infrastructure (WebRTC):** Architected the backend services powering real-time video, audio, and data communication for Base Talk.
 - Developed the high-performance, WebSocket-based signaling server responsible for negotiating peer connections via SDP and ICE candidates.
 - Use SIP protocol for signaling.
 - Deployed, configured, and managed STUN/TURN servers to enable reliable peer-to-peer connections across complex network topologies (NAT traversal).
- **Call Lifecycle & State Management:** Built the core application logic for managing meeting rooms and participants.
 - Developed REST APIs and WebSocket events for the entire meeting lifecycle (scheduling, creating, joining, leaving, ending).
 - Used Redis for real-time state management of participants.

Tech stack: Go Gin, GORM, Redis, PostgreSQL, Docker, JWT.

Base DrivePro: A centralized cloud storage platform that helps businesses securely manage all digital assets, synchronize instant access across all devices, and streamline collaboration.

- **Core File Synchronization Engine:** Architected and developed the backend services powering Base DrivePro's file management and synchronization.

- Developed the file upload/download APIs.
- Developed file management.
- Designed the database schema to efficiently store file metadata, version history, and user relationships.
- **Secure Sharing & Collaboration:** Built the features enabling secure multi-user collaboration.
 - Integrated with the central authorization service (e.g., OpenFGA) to enforce granular, role-based permissions on files and folders.
 - Developed functionality for creating and managing various types of shareable links (public, password-protected, expiring).
- **Asynchronous Asset Processing Pipeline:** Designed a scalable, message-driven pipeline to process uploaded assets.
 - Stored processed and original assets in an S3-compatible object storage (e.g., FCI, GCP).
- **Search and Discovery:** Implemented a robust search capability across the entire platform.
 - Built a content indexing service that extracted text from documents (PDFs, Docs) and fed it into Elasticsearch.
 - Developed search APIs that supported full-text queries, filtering by metadata, and permission-aware results.

Tech stack: Go Gin, GORM, Redis, PostgreSQL, Docker, JWT.

Software Engineer/Alpha researcher	INF-Capital	Feb 2023 - Mar 2024
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Quantitative Research & Trading Platform

- **Alpha Factory:** Build a system that helps build, test, evaluate and manage alphas. Helps alpha researchers use data from different sources, features, labels and automatically evaluate and compare alphas with each other.
- **Strategy visualization:** Build and maintain tools to visualize indicators, strategy execution processes, and backtest results. It helps experts combine indicators, conditions and commands to build strategies and evaluate those strategies.
- **Backtesting:** Simulating prices and brokers helps experts test their strategies on many types of data and brokers. Provide strategic assessment metrics. Run a series of strategies to optimize strategy parameters.
- **Strategies:** Implement strategies from experts to run backtests and live trading.
- **Alpha Research:** Learn and explore approaches to building an alpha using machine learning. Learn how to label financial data. Use features to train alpha. Provide alpha evaluation metrics.
- **Price simulation:** Simulate prices using statistical methods and machine learning to test alphas.

Tech stack: Python, Numpy, Pandas, Plotly, Ta-lib, Sklearn, Pytorch, Stats-models, GBM, High-chart, Streamlit, Redis..

Back End Developer	Skyquant	May 2022 - Feb 2023
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Game Automation & Data Platform

- **Game Automation:** Build automated tasks and trading features for automated bot systems of 10,000 bots.
- **Data collection:** Designed and implemented a data crawler system to collect user data, group information, and videos.

Tech stack: Elixir, Python, Selenium, BS4, HttpRequest.

Intern Software Engineer	Cyber Eye Technology	Jan 2022 - Apr 2022
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Extract Information From Identity Card

- **ID card detector:** Developed and trained a lightweight ID card detection model using MobileNetV2, optimized for high performance on edge devices. My role included data

research, custom labeling with ImgAug, and model training in Pytorch.

- **Page de-warping:** Implemented a page de-warping algorithm using a cubic sheet model and adaptive thresholding in OpenCV. This module significantly improved the accuracy of the downstream OCR engine by correcting geometric distortions in input images.

Tech stack: Python, C++, OpenCV, ImgAug, Pytorch.

API Marketplace

- **API Marketplace:** Developed a multi-tenant API Marketplace platform, enabling third-party developers to publish and monetize their APIs while allowing consumers to discover, subscribe, and integrate them into their applications.
- **Document Comparison Service:** Engineered a specialized microservice to calculate the similarity between two large text documents, achieving linear time complexity ($O(n)$) for efficient, real-time comparison.

Tech stack: Golang, Gin, Python, Django.

Intern Software Engineer	Genisys	Jan 2020 - Sep 2021
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Movement Direction Detector

- Determine the direction of movement in the captcha code with CV2 and algorithm with high accuracy.

System

- **Data visualization:** Build a simple website to visualize data.
- **Automated trading system:** Build indicators, signal notification feature, and backtest expert advisors on MT5.

Tech stack: Python, Plotly, Pandas, C++, MetaTrader 5 (MT5).

SIDE PROJECTS

- **Workflow scanner:** Using AI to digitize the process from photos to base products.
- **Trading System:** Developed a user management web application enabling users to configure parameters and run pre-designed strategies for automated trading on Binance.

ADDITIONAL EXPERIENCE AND AWARDS

- Pioneer Engineer of the year at Base.vn (2024)
- Third prize of AI Innovation Challenge at Base.vn (2025)
- First prize of Vietnam's student olympiad in information technology (2020). (ranked #3)
- Second prize of Vietnam's student olympiad in information technology (2018). (ranked #4)
- Third prize of domestic teams in ACM-ICPC regional contest (2018, 2021). (ranked #12)
- First prize of HaUI scientific research student award (2021). (ranked #1)
- Third prize of Procon Vietnam (2021)

EDUCATION

Hanoi	Hanoi University of Industry	2018 – Present
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- Major: Electronics and Communication Engineering.

LANGUAGE AND TECHNOLOGY

- **Technology:** C/C++, Python, Go, JS, Elixir, MySQL, PostgreSQL, Redis, RabbitMQ, GCP
- **Language:** Vietnamese (Native), English (Medium)

