

Tran Quoc Truong

Product Engineer · Applied AI · Backend Systems

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Summary

Product Engineer & Applied AI Engineer building agentic applications, RAG platforms, and backend systems, with a focus on production reliability, observability, and evaluation.

Combines formal AI training with backend architecture experience in control-plane design, domain/service boundaries, and asynchronous task processing. Bridges software engineering and AI through trace reconstruction, runtime observability, and automated evaluation gates.

Technical Skills

Agentic AI & Orchestration: LangGraph, Multi-Agent Systems, MCP (Model Context Protocol), Tool Calling, LiteLLM, LangChain, Agentic Workflows, Qdrant (Vector DB), Milvus, Docling, RAG & Hybrid Retrieval

LLM Evaluation, Observability & Security: OpenTelemetry (OTel), Runtime Trace Reconstruction, LLM-as-a-Judge, Deterministic Quality Gates, Prompt Injection Testing, Data Leakage Evaluation, LoRA/QLoRA Fine-tuning, Synthetic Data Generation, Langfuse, PyTorch

AI Systems & Backend Architecture: Python, FastAPI, Django/DRF, Pydantic, SQLAlchemy, Celery, Redis, PostgreSQL, RESTful APIs, Asynchronous Workflows, Idempotent Processing

Platform, Infrastructure & Tooling: Docker, Docker Compose, Nginx, S3-compatible Object Storage (MinIO), Git, CI/CD, Linux

Experience

FPT Software , Applied AI Engineer & Automation Tester	Ho Chi Minh City, Vietnam Dec 2024 – present 1 year 10 months
- IQP (Code Intelligence & Quality Retrieval): Architected backend retrieval for IQP combining semantic vector search, BM25 lexical signals, and Code Graphs, exposing contextual tools to AI clients via Model Context Protocol (MCP) to automate quality analysis across multi-repository codebases. - Agent Assurance (Testing Discipline for AI): Applied software testing discipline to agentic systems by architecting an assurance engine with explicit domain boundaries and async evaluation workflows; implemented evidence-capture paths through LiteLLM and OpenTelemetry-based instrumentation, with idempotent trace persistence. - Agent Assurance (Assurance Lifecycle & Verification): Applied an end-to-end assurance lifecycle spanning Intake, Strategy, Requirements, Test Design & Oracle Definition, Measurement Qualification, Validation, Reporting, and Re-assurance, supported by trace-based behavioral evaluation and regression workflows. - Banking Automation & Quality Operations: Engineered reusable cross-platform test automation and 1,500+ lines of SQL validation across banking and payment systems, cutting manual regression effort by ~70%.	
FPT Software Academy , Full-Stack Developer Intern	Ho Chi Minh City, Vietnam Sept 2024 – Dec 2024 4 months
- Built the core backend for an online learning and assessment platform using Django with role-based access control and automated exam workflows. - Integrated a separate FastAPI computer-vision service for AI-assisted real-time exam proctoring and face detection. - Containerized and deployed the multi-service architecture using Docker Compose, Nginx reverse proxy, and Cloudflare Tunnel.	

Achievements

2nd Place — IVS Hackathon 2026	Aug 2026
Awarded 2nd place for independently architecting an end-to-end AI Agent Verification engine (Agent Assurance) featuring runtime evidence capture, trace-based behavioral evaluation, and governed quality gates; subsequently integrated into Omni-Agent.	
Second Prize — Autonomous Driving Research Paper Competition	Apr 2024
Co-authored research combining YOLOv8 perception, lane segmentation, and PID steering control in Unity simulation, completing the autonomous benchmark in 125.8 seconds with a perfect 100% score.	

Featured Projects

Omni-Agent — Applied AI Platform (Knowledge Builder & Agent Assurance)

An Applied AI platform engineered from real operational needs, unifying versioned document RAG, LangGraph multi-agent orchestration, and integrated agent verification within a modular multi-service architecture.

- Platform Architecture: Engineered a modular monorepo featuring a Django/DRF control plane for project tenancy, identity, and permissions, backed by decoupled, stateless Celery workers for asynchronous processing workloads.
- Knowledge Builder: Built document processing pipeline with Docling layout parsing/OCR, snapshot chunking, Qdrant vector indexing, a Streamable HTTP MCP tool server, and a LangGraph-based multi-agent runtime with citation-grounded RAG.
- Agent Assurance (IVS Hackathon 2nd Place): Implemented execution evidence capture through LiteLLM and OpenTelemetry, trace reconstruction pipelines to normalize multi-turn trajectories, and deterministic quality gates.
- Reliability & Data Integrity: Designed idempotent evidence ingestion keyed by trace/span identity, with PostgreSQL-backed execution metadata and S3-compatible artifact storage.

APIT — Agent Programmatic Integration Testing

AI-assisted API testing framework generating structured test scenarios from API documentation via fine-tuned LLMs.

- Developed a bilingual synthetic dataset generation pipeline producing 1,258 domain-specific API testing samples.
- Fine-tuned Qwen2.5-3B with LoRA/QLoRA, achieving macro-F1 of 0.655 (+41.5% relative improvement over Llama-3.2-3B baseline).
- Implemented a hybrid evaluation pipeline combining LLM-as-a-Judge, fuzzy matching, and deterministic JSON-schema validation.

E-Commerce AI Assistant — Conversational RAG & Search

End-to-end shopping assistant combining filtered vector search and multi-agent conversational retrieval.

- Built product semantic search using Milvus, cosine similarity, embeddings, and dynamic category/price filters.
- Implemented multi-turn conversational agent with LangGraph and LangChain for context-aware product consultation.
- Containerized multi-service architecture with FastAPI, PostgreSQL, Redis, Milvus, and Docker Compose.

Education

FPT School of Business & Technology, Master of Software Engineering in AI	Ho Chi Minh City, Vietnam May 2026 – present
FPT University, Bachelor of Artificial Intelligence	Ho Chi Minh City, Vietnam 2021 – 2025

Languages

- Vietnamese:** Native
- English:** Professional working proficiency