

Nikita Lapin

Senior Software Engineer · AI Researcher

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Summary

Senior software engineer. PhD candidate in artificial intelligence. Seven years of software engineering across mobile, backend, and streaming systems in logistics, aviation, regulated medical, fintech, and consumer domains. Stack includes Flutter, Android, Spring Boot, Quarkus, FastAPI, and Kafka. PhD candidate in Artificial Intelligence at NTU “Kharkiv Polytechnic Institute”, researching graph-based neural models for image classification without backpropagation.

Experience

N-iX · Senior Software Engineer

Dec 2021 — Present · Ukraine

- Built features end-to-end on the Bosch global logistics platform — imaging and label-recognition pipelines, cross-hub goods tracking, hub gate and yard logic — across Flutter clients, Spring Boot/Quarkus services, and Kafka Streams.
- Picked the on-device ML frameworks and fixed C++/Kotlin interop bugs that had been blocking them from running in production.
- Owned architecture calls on both mobile and backend, and ran Flutter and backend interviews for N-iX across multiple projects.
- Pushed the team into real planning poker and backlog refinement — estimates stopped being fiction.
- Production stack: Flutter, Spring Boot, Quarkus, Kafka Streams, Nuclio, PostgreSQL, Helm, Kubernetes, Grafana (Loki, Prometheus).

Donatta · Software Engineer

Nov 2022 — May 2024

- Built and shipped the Donatta charity Flutter app end-to-end — Firebase Auth, Firestore, Cloud Functions, BLoC + go_router, Hive, Crashlytics — across iOS and Android.
- Implemented a tiered update system (silent / notification / forced) and Codemagic CI for Android and iOS builds.
- Wrote Firebase Cloud Functions in Node.js for transaction sync, achievements engine, jar scraping, and analytics.

SlikEkspressen · Full Stack Engineer

Apr 2021 — Mar 2022

- Built mobile apps with Flutter and Dart, with auth and data through Firebase Auth and Firestore.
- Wrote backend services in Spring Boot, Java, Kotlin, and PostgreSQL.

N-iX · Middle Android Engineer

Jan 2021 — Dec 2021 · Kharkiv, Ukraine

- Shipped mobile apps in Flutter and Android native, plus the Spring-based backend services behind them.
- Worked across Dart, Kotlin, and Java to deliver features end to end.
- Production stack: Flutter, Firebase Messaging, Spring Boot, Kafka, PostgreSQL, Helm, Docker, Kubernetes, Grafana (Loki, Prometheus).

Qualium Systems · Java · Android Developer

Jan 2019 — Jan 2021 · Kharkiv Region, Ukraine

- Built Android and Flutter apps with ARCore, ViroCore, RxJava, Dagger2, MVP/MVVM, LiveData, Moxy, Cordova plugins, and Jetpack.
- Worked across Java 8, Kotlin, and Dart; touched C++/wxWidgets and Adobe Reader API integrations.

Projects

natural-agi

2023—present

PhD research on explainable image classification via structural graph analysis — no backpropagation, no neural networks. Raster images are skeletonised with Growing Neural Gas plus Ramer-Douglas-Peucker, then iterative structural reduction composes stable “concept” attractors per class. Classification runs on Graph Edit Distance between input

and concepts under Winner-Take-All. Hits ~82% accuracy on few-shot MNIST with 5-6 samples per class and concepts that are explicit, visualisable graphs.

- Stack: Python, PyTorch, Nuclio, Kafka, Neo4j, MLflow, Docker.
- Repo: github.com/kbokh/NaturalAGI.

bosch-logistics-platform

2021—present

Platform powering logistics operations across a global hub network — imaging workflows that book physical goods into systems of record, end-to-end tracking of goods between hubs, and hub-side security and yard logic.

- **imaging & booking** — End-to-end recognition of pallet labels, counting boxes per pallet, and booking results into SAP and other downstream systems. *C++, C, Kotlin, Spring Boot, Kafka Streams, Nuclio, Dart, Flutter*
- **cross-hub tracking** — Tracked goods between hubs across countries and continents, ingesting logistics messages from many external systems. *Java, Spring Boot, Quarkus, Kafka Streams, REST*
- **hub operations** — Hub-side logic: gate security, dock security, and coupling/decoupling of trailers and trucks. *Java, Spring Boot, Quarkus, Dart, Flutter*
- Platform stack: Docker, Kubernetes, Helm, Grafana (Loki, Prometheus), Kafka, PostgreSQL.

voice-rag-aviation-assistant

2025—present

Voice-first assistant for commercial aviation crews (NDA). FastAPI backend that ingests aircraft technical documentation, runs intent classification and retrieval-augmented generation over a managed cloud knowledge base, and streams text and synthesised audio over SSE to a spatial-computing client. Pluggable per-aircraft registry with feature flags.

- Stack: Python, FastAPI, AWS Bedrock (Nova, Knowledge Bases), AWS EC2, AWS S3, SQLAlchemy, Pydantic, ElevenLabs, Server-Sent Events.

ortho-hexapod-image-service

2026—present

Regulated medical-device backend for an orthopedic hexapod external fixator (NDA). FastAPI service that processes X-ray imagery, solves the underlying parallel-manipulator kinematics, and generates patient-specific correction plans under clinical safety constraints.

- Stack: Python, FastAPI, NumPy, OpenCV, AWS ECS, AWS S3, Docker, pytest.

donatta

2022—2024

Charity and donations Flutter app for Ukrainian causes — auth, jar discovery, donation flows, achievements, and gifts. iOS and Android, with a tiered silent/notification/forced update system and Codemagic CI. Backed by Firebase (Auth, Firestore, Messaging, Crashlytics, Remote Config) plus Cloud Functions for Monobank jar scraping, transaction sync, achievements computation, and analytics.

- Stack: Flutter, Dart, BLoC, `go_router`, Firebase (Auth, Firestore, Messaging, Crashlytics, Remote Config), Cloud Functions, Node.js, Hive, Codemagic CI.

algo-trading-desktop

2019—2020

Desktop trading platform built around the actor model — users compose rule-based automations that buy and sell stocks, cryptocurrencies, and other instruments against connected broker and exchange APIs.

- Stack: Java, Akka Actors, Akka Streams, JavaFX, WebSocket, REST, JUnit, Mockito, Jackson.

Publications

- **Few-Shot Learning of a Graph-Based Neural Network Model Without Backpropagation**
Lapin, Bokhan, Parzhyn · *Management Information System and Devises* · no. 187 · 2025
doi: 10.30837/0135-1710.2025.187.103 · arXiv: 2512.18412
- **A New Approach to Building Energy Models of Neural Networks**
Parzhyn, Lapin, Bokhan · *Advanced Information Systems* · Vol. 9 Issue 4 · 2025
doi: 10.20998/2522-9052.2025.4.13

Skills

Languages — Dart, Kotlin, Java, Python, TypeScript, C++, C

Frameworks — Flutter, Spring Boot, Quarkus, FastAPI, Android SDK, RxJava, Kafka Streams, PyTorch, TensorFlow Lite

Infrastructure — PostgreSQL, Neo4j, Kafka, Docker, Kubernetes, Helm, AWS (Bedrock, EC2, ECS, S3), GCP (Cloud Run), Firebase, Nuclio, MLflow, Grafana (Loki, Prometheus)

Research — Graph-based neural models, Few-shot learning, Computer vision, Stewart-Gough kinematics, Retrieval-augmented generation, Probability & statistics