

Danil Lobanov

Senior Software Engineer - Scientific Instrumentation, Lab Systems & IoT

Guangzhou / Shanghai, China | danil.lobanov@outlook.com | +8613237645810 | linkedin.com/in/envydany

Summary

Software engineer with a scientific foundation (**M.Sc. Software Engineering, B.Sc. Agronomy**) who builds instrument-connected, data-integrity-focused systems. 5+ years shipping production .NET backends and an edge-to-cloud **IoT telemetry platform** device authentication, MQTT ingestion, buffering against network interruptions the same plumbing that drives laboratory instrument software. Recent work integrates **AI/LLM (Semantic Kernel, Google Gemini)** with secure handling of sensitive records (PII masking, operation logging, rationale tracking). Comfortable across the full loop: from edge device and database schema to deployment and post-launch metrics.

Targeting **lab / agro / biotech software**, where domain knowledge plus reliable engineering is rare.

Experience

Senior Backend Developer, AppFox – Remote

Dec 2025 – present

- Architected and maintained a distributed system of 10+ ASP.NET Core microservices (API Gateway/BFF, Identity, Inventory, Store, orchestration) on PostgreSQL, RabbitMQ/MassTransit, Redis, Docker and CI/CD client/server reliability and service-to-service communication directly transferable to instrument–software systems.
- Cut data-access API latency by up to 50% by optimizing .NET hot paths, EF Core/PostgreSQL queries and response aggregation performance engineering for data-intensive, real-time flows.

Full-Stack Developer, Valletta Software Development – Remote

Mar 2023 – Oct 2025

- Designed a scalable modular monolith (ASP.NET Core, EF Core, PostgreSQL, Next.js, MinIO) applying clean architecture, DDD, event-driven processing and the outbox pattern, with separated domain, worker and API layers.
- Integrated AI/ML with Semantic Kernel and Google Gemini: AI-generated plans, embeddings, and key for sensitive/regulated data AI operation logging, rationale tracking, PII masking and secure prompt/data handling.
- Delivered document management, onboarding workflows, engagement analytics and authentication across 50+ REST endpoints (document control experience relevant to ELN / lab data management).

C#/.NET Developer, Empire of Bloom – Guangzhou, China

Sept 2021 – Feb 2023

Instrument control & telemetry platform for smart agriculture the closest analogue to laboratory instrument software.

- Built an end-to-end IoT automation platform for a smart hydroponic system the same class of problem as lab instrument control: ASP.NET Core 6, PostgreSQL, EF Core, MQTT, Raspberry Pi edge services, Blazor Server, SignalR, Telegram Bot, Docker Compose, unified into a single automated monitor-and-control workflow.
- Implemented the instrument/edge data layer: an MQTT bridge, background workers, device authentication, telemetry buffering and REST ingestion automated collection from sensors and edge devices, resilient to backend/network interruptions (data-integrity-minded ingestion).
- Delivered real-time monitoring and control (SignalR live updates, Blazor operator UI) over telemetry, alerting and remote actuation of physical devices.

Projects

Mini-CDS - Instrument Data Station (WPF / .NET)

<https://github.com/ddenvy/Mini-CDS>

Desktop Chromatography-Data-System-style application: ingests a live instrument/sensor stream over MQTT, renders real-time charts (ScottPlot), applies DSP (filtering, baseline correction, peak detection), and stores results with a full append-only audit trail and mock electronic signatures a working demo of lab data-integrity requirements.

Lab AI Assistant - RAG over SOPs & Instrument Data (Semantic Kernel)

<https://github.com/ddenvy/Lab-ai-assist>

RAG assistant over scientific protocols/SOPs and instrument output: question answering with source citations, embeddings and vector search, plus AI operation logging, rationale tracking and PII masking for auditability bridging LLM integration and regulated lab environments.

Education

Moscow Engineering Physics Institute (MEPhI), MSc in Software Engineering
GPA: 3.8/4.0

Sept 2024 – July 2026

Peoples' Friendship University of Russia (RUDN), BSc in Agronomy
GPA: 3.1/4.0

Sept 2011 – June 2015

Skills

Languages & Backend: C#, .NET 6–10, ASP.NET Core (Minimal API), EF Core, gRPC, SignalR, REST, Go

Desktop & UI: WPF, MVVM (CommunityToolkit.Mvvm), WinForms, Blazor, real-time charting (ScottPlot / OxyPlot)

Frontend: JavaScript, NextJs, React, VueJs, Flutter

Instrument & Lab: MQTT, OPC UA, SiLA 2, device/edge connectivity, telemetry ingestion & buffering, Raspberry Pi, AnIML (awareness)

Signal Processing: Math.NET Numerics; filtering (moving average, median, FIR/IIR), FFT, peak detection, baseline correction, time-series

Data Integrity: Audit trails (append-only), ALCOA+ principles, 21 CFR Part 11 / EU Annex 11 / GAMP 5 (working knowledge), PII masking, operation logging

AI & LLM: Semantic Kernel, LangGraph, RAG, embeddings, Google Gemini / OpenAI, secure prompt & data handling

Cloud & Infra: Azure (Container Apps, VNets), Docker, Kubernetes, Nginx, Prometheus, GitLab CI/CD, GitHub Actions, Scrum/Kanban

Databases & Messaging: PostgreSQL, SQLite, Redis, SQL Server, Cosmos DB; RabbitMQ, MassTransit, Kafka, Azure Service Bus, MQTT

Testing: xUnit, Moq, NSubstitute, integration & E2E tests

Languages: Russian (native), English (B2), Chinese (B1)