

Ylya Martchenko

IT LEAD ENGINEER | CLOUD, IOT & SOFTWARE ARCHITECTURE

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French Citizen (EU)

Available from July 13th, 2026

LANGUAGES

French **C2 • Native**
English **C1 • Fluent**
Russian **C1 • Bilingual**

SKILLS

Full Stack Web & Mobile

Next.js Angular React Native
Liquid Templates JavaScript / ES6
Tailwind CSS
WebSocket / Server-Sent

Backend & Integration

Spring Boot Microservices
RabbitMQ / Kafka
REST APIs / GraphQL
PostgreSQL / pgvector
MySQL / Redis Cache
Hexagonal Architectures
Clean Architecture / DDD

Cloud & DevOps

CI/CD Kubernetes (K8s)
Docker / Containers
GitHub Actions / GitLab CI
Jenkins / Ansible / Terraform
Linux / Bash Scripting
Staging / Production

IoT & OT Systems

LIN-bus CAN-bus FreeRTOS
ESP32 SPI / I2C / UART BLE
Modbus TCP/RTU MQTT / CoAP
Metrology (Trescal)

Languages & Scripting

TS Java C++ Python C
Rust C# / .NET SQL / PL/pgSQL

Security, SRE & Observability

OAuth2 / OpenID / JWT
Zero Trust / IAM
NIS2 / GDPR Compliance
WASM Sandbox
Prometheus / Grafana
OpenTelemetry / SRE
AI / RAG Engineering
Git / Postman / Insomnia



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IT LEAD PROFILE

Computer Science Engineer graduated from **Polytech Nancy (IA2R)**. My background combines solid full-stack engineering expertise (**Spring Boot** microservices, **React/Angular**, **.NET Core**) and secure cloud infrastructure (**Kubernetes**, **CI/CD** pipelines) with critical embedded IoT/OT systems (LIN/CAN automotive gateways, real-time physical buses, FreeRTOS). Versatile and adaptable, I bridge business requirements with highly available, resilient, and secure distributed architectures.

PROFESSIONAL EXPERIENCE

Full Stack Developer (Apprenticeship)

Equasens • Villers-lès-Nancy, France

2023/09 — Present

- HDS Environment & Compliance:** Developing critical software solutions within an **HDS (Health Data Hosting)** certified ecosystem, ensuring sensitive data protection and strict compliance with GDPR standards.
- Microservices & Cloud Architecture:** Designing and maintaining highly resilient distributed microservices using **Spring Boot**, orchestrated via **Kubernetes (K8s/Docker)** and securing asynchronous flows via **RabbitMQ**.
- DevOps & Critical Tasks:** Full automation of CI/CD pipelines under **Jenkins** and developing automated background **CRON jobs** for processing and reconciling heavy data under **PostgreSQL**.

Tech Lead / Full Stack Developer

Domaine Schumacher-Knepper • Wintrange, Luxembourg

2025/06 — 2025/09

- Security & Alcohol Compliance:** Designed a custom interception gateway running in the DOM event-capturing phase (`useCapture = true`) to halt checkout actions, ensuring 100% legal compliance in Luxembourg.
- Performance & Zero CLS (Lighthouse 100):** Comprehensive optimization of the static rendering architecture (Liquid/CSS), achieving a **100/100 Lighthouse Performance score** and zero Cumulative Layout Shift (CLS) on mobile devices.
- IntersectionObserver & Web Component:** Developed a historical countdown component optimized for mobile CPU cycles using **IntersectionObserver** and synchronized at a constant 60 FPS using **requestAnimationFrame**.

✓ Compliant with Luxembourgish Alcohol Legislation 🌐 Multi-language website: FR | DE | LU | EN

ARCHITECTURE & R&D PROJECTS

TesLimitless — Active LIN/CAN IoT Gateway

Lead Embedded & Mobile Systems Engineer

C++ FreeRTOS ESP32 LIN-bus CAN-bus React Native (BLE)

Physical MITM gateway on Tesla Model 3 LIN-bus, restoring physical stalks and intercepting steering capacitive commands to inject CAN-bus macros via diagnostic port. Coupled via **BLE** to a **React Native** real-time HUD dashboard.

- S Situation:** Real-time processing obligation on the LIN-bus within a strict deterministic delay of 1.5ms, under penalty of haptic communication errors.
- A Action:** Isolation of the safety-critical LIN capture task on Core 1 of the ESP32 using FreeRTOS C++, offloading CAN calculations and BLE telemetry to Core 2.
- R Result:** Latency of sub-1.5ms deterministic execution, total stability (0 frame errors), and fluid telemetry.

YlyaBot — RAG AI Agent & Observability Dashboard

Lead Systems Architect & AI Engineer

Next.js 16 React 19 Supabase RPC pgvector Redis (Upstash) JWT

Recruitment agent based on decoupled RAG in a Git submodule. Semantic search by cosine distance in a PostgreSQL database, coupled with an analytical observability portal.

- S Situation:** Avoid 429 rate limit errors from free LLM quotas during simultaneous user access sessions.
- A Action:** Conception of a fallback infrastructure with 5 priority levels, paired with a quota exclusion cookie at midnight and a Redis cache. Native PostgreSQL vector computation via PL/pgSQL RPC under 10ms.
- R Result:** 100% availability, first token under 150ms, and analytical dashboard secured under JWT.

EDUCATION

Engineer in IA2R (Informatics, Automatic, Robotics, Networks)

Polytech Nancy • Vandœuvre-lès-Nancy, France

2023 — 2026

Diploma of Higher Education in Engineering Science

F.R.U. Mathematics, computer science, mechanics • Metz, France

2022 — 2023

BTEC Higher National Diploma in Physics Measures

U.I.T. Department of Measures • Metz, France

2021 — 2022

PeiP (Polytech engineering schools course)

Polytech Nancy • Vandœuvre-lès-Nancy, France

2019 — 2021