

# Pavel Anpin



Senior Software Engineer | Distributed Systems | 10+ years with .NET

Email | Website | GitHub | Matrix | LinkedIn

## SUMMARY

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Senior Software Engineer with 12+ years designing event-driven platforms for smart buildings, multimedia installations and other cyber-physical systems.

Proven success in building high-performance, scalable, and maintainable systems across domains.

Passionate about functional programming, reproducibility, and distributed architectures. Always open to new challenges - whether consulting, partnering on ambitious ideas, or supporting teams that value thoughtful engineering.

## SKILLS

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- **Languages:** F#, C#, SQL, C++, Nix, Rust, Lua, Bash, PowerShell, Python, HTML, CSS, JavaScript, Netlinx, ESP-IDF, Shaders (HLSL, GLSL)
- **Backend & Distributed:** Akka.NET, Giraffe, ASP.NET/ASP.NET Core, CQRS/Event Sourcing, Actor Model, gRPC, REST, WebSockets, WebRTC, SignalR, OAuth2/OIDC, JWT, OpenAPI, OpenTelemetry, low level socket programming,
- **Data & Observability:** PostgreSQL/TimescaleDB, ClickHouse, Redis, MQTT, RabbitMQ, Grafana, Prometheus, OpenTelemetry, jupyterlab,
- **DevOps & Infra:** Nix/NixOS, Docker, Linux, systemd, Windows, Cloud (Azure, AWS, DO, hetzner), nginx/openresty, IIS, WireGuard, SSH, CI/CD pipelines, MSBuild, FAKE, Paket,tmux, nvim, git, rider, dotMemory, dotPeek
- **Frontend & Apps:** Fable, Avalonia, MAUI/Xamarin.Forms, WPF, SkiaSharp, Astro, TailwindCSS, HTMX, Vega, plotly.js, d3.js, p5.js, CSS, HTML, Figma, Adobe Illustrator
- **Theoretical:** Category theory, algorithms, digital signal processing, linear algebra, statistics, machine learning, optimization, SCRUM/Agile/Kanban, neural networks, computer networks, control theory
- **Live media tools:** vvvv, openFrameworks, MaxMSP/pd, SuperCollider, Ableton Live, Crestron, Biamp, Dante

# WORK EXPERIENCE

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## Alerio

Technical Founder | Dec 2022 - Present

- Shipped real-time building control and monitoring platform for incidents, energy usage, and costs.
- Prototyped a C# solution, gathered market and customer feedback and turned it into a full-stack F# platform (Giraffe/ASP.NET Core, Akka.NET, SignalR, Fable, HTMX, Vega, TimescaleDB/PostgreSQL).
- Implemented reproducible, cost-efficient infrastructure with Nix/NixOS and a self-hosted stack (Grafana, ClickHouse, Forgejo, Authentik).
- Built DSL for efficient hardware integration, runtime module registration from text files, automation rules and data pipelines.
- Implemented reactive graph visualization for arbitrary data from modules: 50000 sparse datapoints loaded in less than 5 seconds in a WebGL rendered graph.
- Implemented offline-first voice control over WebRTC for on-prem devices with self-hosted STT/TTS/LLM pipeline for user intent recognition and response, including smart speaker firmware for ESP32.
- Product website and marketing materials, custom build/publish pipeline for A/B testing with openresty serving static files built from different git branches.

## Independent Contractor

Self-employed | Dec 2016 - Present

Provided expert consulting services and bespoke software solutions across diverse industries, specializing in audiovisual installations, automation systems, and full-stack application development. Delivered and maintained cross-platform apps built with Xamarin.Forms and ASP.NET, transitioning them smoothly to MAUI/Avalonia with ASP.NET Core, while ensuring robust CI/CD practices and comprehensive testing. Transitioned client systems from C# to functional programming using F# and modern frameworks (Akka.NET, Giraffe, Avalonia), significantly enhancing maintainability and efficiency. Mastered a wide array of technologies including C#, F#, Fable, NixOS, Rust (embedded), PostgreSQL/TimescaleDB, Event Sourcing, CQRS, WebRTC, Astro, and advanced multimedia frameworks, demonstrating adaptability in tackling complex technical challenges. Highlights:

- Velonetic presentation room control system: control system with Custom CMS for Tizen Digital Signage, real time control from responsive web interface, scheduling, file upload and transcoding, playlist creation + integration with Crestron, Biamp, Dante, GreenHippo etc + custom Windows kiosks shell to control TouchDesigner and p5.js content for interactive screens
- BrightlinkAV control app and backend: ASP.NET Core, XF->MAUI, Azure, CI/CD

## Past Roles

2013–2017

Progressed from intern to Chief Engineer across 8 Ohm Ltd, AudioVideoSystems Ltd, and IMS Group Ltd, delivering end-to-end audiovisual systems for hospitality, universities and commercial environments. Led engineering workflow development and team training; handled pre-sales and client/contractor coordination; and designed, programmed, and commissioned solutions, managing projects from scoping through installation, handover, and training to ensure reliable, high-quality outcomes.

## Open Source Contributions

- Ported Akka.NET Management DNS-based service discovery from Scala Akka; added async DNS provider, examples, tests, and docs—enabling reliable cluster bootstrapping.
- Maintainer/contributor to nixos/nixpkgs packages and modules, improving reproducibility and developer tooling.
- Authored a popular MAUI/Xamarin.Forms context menu plugin with >60 GitHub stars.
- Active in arts/tech communities; explore generative visuals and interactive media.

## Interests

In my spare time, I enjoy learning new things, cycling, exploring generative visuals, baking and reflecting on the nature of consciousness.

## EDUCATION

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### Siberian State University of Telecommunications and Information Science

Engineer’s degree, Audio Visual Technologies | Sep 2009 - Jun 2014 (5 yrs)

Graduation Work: Project of audiovisual complex for universal hall in the hotel “Hermitage” in the city of Yekaterinburg

## KEYWORDS

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Functional Programming		Distributed Systems		Event Sourcing & CQRS		Nix & NixOS	
Akka.NET	IoT	Full-stack development		Embedded development		Vibe coding cleanup	
Interactive Installations		Control systems		Audiovisual installations			