

Mathieu Lacage

Software Engineer · Systems & Machine Learning

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Hands-on engineer: co-created ns-3 (2,000+ papers/year), 12 years as CTO scaling a SaaS to 100M messages/day and €4M ARR, now training small language models at INRIA.

Skills

- Languages: C, C++, Python, Go, SQL
- Infrastructure: Podman, MySQL, Ansible, uWSGI, Prometheus, Grafana
- Machine learning: PyTorch
- Networking: InfiniBand, Wi-Fi MAC, IP, TCP

Research Engineer, INRIA

2025 – Present

Researching domain-specific SLMs (Small Language Models) under 1B parameters

- Domain-specific tokenizer adaptation strategies that do not require re-training models from scratch
- Dataset resampling to speed up pre-training loss convergence
- Training convergence stability of MoE models

Select software projects

- 1B GPT-2-style model with mixed-precision pretraining and SFT in PyTorch on 2×H100, grid'5000
- Roofline-based inference timing model, to create interactive visualizations of cost, pricing, and margin models
- Podman-based single-GPU SLM training framework for students
- [naw](#): compressed on-disk streaming of training metrics for long-duration runs

Architect, Hive

2023 – 2025

Decentralized cloud storage on top of a Go-based libp2p network

Scaled storage capacity (100×) and maintained data availability above 99.99%

- Managed the backend team (4)
- Metric collection, analysis, monitoring, and alerting spanning centralized infrastructure and our p2p network
- Debugged and fixed network and IO problems as our production load scaled
- Built Python-based development, testing, and debugging tools
- Planned and managed component-level testing strategies
- Designed forward error correction policies around dynamic decisions to maximize data availability and minimize storage use

CTO, co-founder, Alcmeon

2011 – 2023

Conversational customer care solution for large enterprises, such as LVMH, SNCF, FNAC, Carrefour

As CTO, I

- Made sure our customers' data stayed safe via at-rest encryption and centralized access control
- Scaled our code and infrastructure to handle peaks of 100M messages per day

- Built and led the engineering team from 0 to 10
- Mentored and directly managed the engineering manager and product director

As co-founder, I focused on

- Delivering same-day fixes to customer issues
- Building prototypes to explore new business opportunities

Select projects

- Pub/Sub streaming WebSocket server that scales to 10K concurrent connections per CPU
- Zero-downtime scale up of a single database with a single table to partitioned databases per customer, 250 tables, 1TB
- Centralized access control for SSH via Google SSO and SSH certificates
- A security policy that spans infrastructure and application-level code
- Metabase dashboards consolidating CRM, volume and billing data to track MRR and ARR metrics

Software Lead, ns-3, INRIA

2005 – 2011

ns-3, the de facto open-source network simulator for network research used in 2,000+ papers/year

Co-led its development with the University of Washington and Georgia Tech teams.

- Designed and implemented core APIs: object model, network packets, event scheduler
- Implemented models for UDP/IP/ICMP, MAC/PHY Wi-Fi network protocols
- Integrated unmodified real-world network protocol implementations
- Recruited and managed a local development team (5)
- Relocated to the University of Washington for 10 months to initiate collaboration with the US team
- Evangelized use of ns-3 within other research institutes via presentations and seminars
- Published 7 papers on ns-3 (4 as main author and 3 as co-author)

Software Engineer, INRIA

2003 – 2005

Designed and built software for network research teams: event-driven simulation, distributed experiment management, Linux kernel Wi-Fi drivers.

Provided software mentoring to research projects involved in bio-reactor chemical reaction control and medical image analysis.

Software Engineer, Sigma-Designs

2001 – 2003

Video decompression chips

Implemented DVD navigation control software for chips sold to OEMs to build consumer DVD players.

Education

2006 – 2010	Ph.D. at University of Nice, <i>Experimentation Tools for Networking Research</i> , under the supervision of Walid Dabbous
1998 – 2001	Engineer at Telecom ParisTech (ENST), Software Engineering, Networking, Micro-Electronics