# Ufuk Bombar

**Distributed Systems Engineer**

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Software engineer and PhD researcher building distributed systems in **Go**, Kubernetes controllers, and large-scale data pipelines. Experience spans edge-cloud orchestration, production backend services, observability, and ML deployment; hands-on work on local LLM inference with MLX.

## Technical Skills

**Languages:** Go, Python, C++, Rust
**Infrastructure:** Kubernetes, kubebuilder, CRDs, Docker, AWS Lambda, Linux
**Data & observability:** ClickHouse, PostgreSQL, Redis, Prometheus
**AI systems:** MLX, PyTorch, ONNX Runtime
**Languages spoken:** Turkish (native), English (C2), French (B2)

## Experience

**Researcher & Open-Source Maintainer** Nov 2024 – Present
*Sorbonne University, LIP6 — Retina*

- Design and co-maintain **Retina**, an open-source distributed Internet measurement platform in **Go**, used at Sorbonne University and the French Defense Ministry.
- Built an **adaptive-rate scheduler** controlling millions of measurement probes; authored the design specification and led its review with senior researchers.
- Instrumented the platform with **Prometheus metrics and structured logging**; review external contributions and maintain design documentation and contributor guides.

**Software Engineering Intern** Apr 2024 – Sep 2024
*Nokia Bell Labs*

- Architected a **Go-based Kubernetes integration layer** for edge/IoT orchestration, enabling edge-workload deployment in **under 5 seconds**.
- Implemented controller-to-node communication with **gRPC and Protocol Buffers**; built a Go provisioning tool replacing a **30-minute cluster setup** with a single command.

**Software Engineer (Research)** Apr 2023 – Apr 2024
*Sorbonne University, LIP6 — EdgeNet*

- Maintained a production suite of approximately **15 Kubernetes controllers in Go** for global edge-cloud orchestration; rewrote reconcilers and removed unused controllers to improve stability and maintainability.

**Machine Learning Engineer** Aug 2021 – Aug 2022
*ArgosAI Technology*

- Built a production runway-monitoring model in **PyTorch**, reducing false-positive detections from **50+ to fewer than 4 per day**.
- Led the **C++ inference server migration to ONNX Runtime**; introduced **Kubeflow** for GPU training orchestration, replacing manual SSH-based job management.

**Full-Stack Software Engineer** Jun 2020 – Aug 2021
*Borda Technologies*

- Maintained an **ASP.NET Core / PostgreSQL** hospital inventory system deployed across **20+ hospital sites**; built an internal infection-tracking application using **AWS Lambda** and Flutter.

## Selected Projects

**Gemma 4 Inference Engine** *Personal project | MLX*

- Built a local inference engine using the **MLX backend**, achieving approximately **26 tokens/s** with a **Q4-quantized Gemma 4 E4B** model on an Apple silicon laptop.

**MPAT — Measurement Platform Analysis Tool** *Go | ClickHouse | IMC '25*

- Designed a pipeline processing **45 TB of traceroute data in under 6 hours**; improved throughput while reducing the codebase from **11,000+ to 3,000 lines**.

## Education

**PhD, Distributed Systems & Network Topology** — Sorbonne University 2024 – 2027 (exp.)
**MSc, Distributed Computing & Computer Vision** — Sorbonne University 2022 – 2024
SFRI scholarship; thesis on Kubernetes extensions for edge-network orchestration at Nokia Bell Labs.
**BSc, Computer Engineering** — Bilkent University 2017 – 2022