

# Corentin Lallier



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*PhD in Graph Deep Learning | Senior ML Engineer | Agentic Systems & Cloud Engineering*

## Profile

Passionate about the convergence of neural networks, industrial research, and data engineering, I enjoy designing innovative and high-performance solutions. Currently Senior Data Scientist at Mindflow specializing in agentic systems, spanning academic research and production engineering. My background combines a PhD in Graph Machine Learning with expertise in cloud data engineering (Kafka, Spark, Scala). I value collaborative work, driven by curiosity and the resolution of complex industrial challenges.

## Professional Experience

**Mindflow** *Paris / Remote*  
SENIOR DATA SCIENTIST *Apr 2023 - Present*

- Architected a custom agentic layer for a no-code cybersecurity platform, implementing long-term memory, context-aware reasoning, LLM Observability, and hallucination mitigation. Engineered an adaptive orchestration engine utilizing RAG and tool calls for reliable execution across multiple providers (OpenAI, Bedrock, Gemini, Mistral, LiteLLM).
- Mentored a talented AI team and shared expertise company-wide on agentic systems, RAG, and search optimization. Supported CSEs and Solution Designers in technical implementation.
- Developed an LLM drift monitoring framework (multi-route scenarios, parallel tool usage). Optimized internal search performance via a robust evaluation suite (MRR, F1, and NDCG).
- Scaled from €0 to €1.5M ARR since joining; delivered AI solutions for major accounts (Thales, LVMH, Auchan, Doctolib, Hermès, Cloudguard, Savencia, Fast Retailing, Heetch, etc.). [Mindflow LinkedIn page](#).
- **Tech Stack:** LiteLLM, Langchain, LangGraph, RAG, tool calls, Bedrock, GPT, Gemini, Claude, Mistral, AWS Cloud

**Lectra** *Bordeaux*  
LECTRA DATA SCIENTIST (PHD) & CLOUD DATA ENGINEER *Sept 2017 - Apr 2023*

- **PhD Research (2020-2023):** Enhanced “sections planning” algorithm by developing graph-oriented heuristics (Attention-based Deep Learning on Graphs) to minimize material waste. Trained models on 100,000+ real nestings using Azure ML, exceeding human expert precision. This is now a live web service used by industrial customers to optimize their production.
- **Data Engineering (2017-2020):** Designed and implemented large data pipelines (1000+ events/sec) for massive IoT fleet (Lectra cutters) using Kafka, Spark and Scala. CI/CD workflows on Kubernetes (Docker, Jenkins).
- One of the first Data Engineers hired at Lectra, supporting company revenue growth from €350M to €500M+ within a 500-person R&D department. [Lectra LinkedIn page](#).
- **Tech Stack:** Python, Scala, PyTorch, GNN, Azure ML, Apache Kafka, Spark, Kubernetes, Docker, IoT

**2B Softeam Data & AI** *Bordeaux*  
SOFTTEAM DATA SCIENTIST - CONSULTANT *Nov 2016 - Sept 2017*

- **Cdiscount:** Developed counterfeit detection algorithms using NLP and Hadoop (Hive/Spark) to secure the marketplace. Collaborated with the legal team to ensure regulatory compliance.
- **Lectra:** Architected clothing pattern recognition tools using Deep Vision and initiated new large-scale data processing pipelines.
- **Tech Stack:** NLP, Computer Vision, Hadoop, Hive, Spark, Java, Scala

**Freelance** *Bordeaux / Remote*  
SOFTWARE ENGINEER (FREELANCE) *May 2013 - Aug 2021*

- **Data Science:** Implemented cloud-native analytics solutions using Python, AWS SageMaker and Google BigQuery for diverse industrial clients: [Cibler](#), [Cdiscount](#)
- **Full-Stack Development:** Developed high-performance web/mobile apps using React, Canvas API, WebRTC and Haxe.
- **Game Development:** Engineered 2D/3D games using Unity3D (C#) and LibGDX. Winner of the [Android Codefest 2013](#). Showcased my game during the Mobile World Congress (MWC) 2014 in Barcelona on the Intel booth.
- **Tech Stack:** AWS, BigQuery, React, Unity3D, C#, Javascript, WebRTC

- Integrated several marketplaces (Amazon, Fnac) and optimized logistics by automating shipping workflows using carrier APIs (UPS, Chronopost). Redesigned the e-commerce platform with responsive design, fuzzy search, and SEO optimization, increasing store visibility and sales by 100%+
- Enhanced internal ERP/CRM and data-driven communication strategies to optimize customer retention.
- **Tech Stack:** C#, SQL Server, .NET, ERP, CRM, SEO, Marketplace APIs

- Developed LYNCEA, a multi-sensor data fusion platform for naval defense. Integrated data acquisition modules and co-developed the high-performance network layer. [\[Video\]](#)
- **Tech Stack:** C++, Qt, Network Engineering, Embedded Systems

- Created Java JEE web services for research sharing and developed cross-language APIs (C++, C#, Java) with a real-time web application.
- **Tech Stack:** Java JEE, C++, C#, Javascript, Web Services

- Object tracking and one-class classification algorithms for video surveillance. Developed video analysis software solutions using C++, Winforms, and MFC in Agile environment. [Foxstream LinkedIn page](#)
- Engineered network video stream retrieval (OpenCV, Winsockets) and remote usage features.
- **Tech Stack:** C++, OpenCV, Winforms, MFC, Agile, Winsockets

## Research Internships

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- Developed a robotic system capable of learning rules through demonstration (Bayesian statistics, Markov networks).
- **Tech Stack:** C++, TCL, Bayesian Statistics, Robotic Platform

- Simulated neural-astrocyte network interactions using mathematical models and Java/RK4 to study focal cortical epilepsy.
- **Tech Stack:** Java, RK4, Computational Neuroscience

## Education

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- Dissertation: Graph-oriented deep learning algorithms for 2D nesting efficiency estimation.

## Publications

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Lallier, C. (2022, ). *Réseaux profonds basés graphes pour la prédiction d'efficience de placements 2D*. Université de Bordeaux. <https://theses.fr/2022BORD0421>

Lallier, C. (2023). Graph Neural Network Comparison for 2D-Nesting Efficiency Estimation. *Journal of Intelligent Manufacturing, Springer Nature*. <https://doi.org/10.1007/s10845-023-02084-6>

Lallier, C., Fournel, A., & Reynaud, E. (2010). A Neurons-Astrocyte Network Model: From Synaptic Boosting to Epilepsy. *Neurocomp'10*. <https://hal.science/hal-00553451/>

## Skills & Interests

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- Personal Projects** [Tech Blog: Insights on Data Science, AI, and Shaders. "The Nature of Code" implementation.](#) [GitHub](#) | [Google Scholar](#).
- Languages** French (Native), English (Full Professional Proficiency).
- Interests** Sports (Crossfit, Running 10k & Half-marathon, Surfing, Hiking), Video games.