

Bilel Saghrouchni

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Profile

Applied AI Engineer and PhD Researcher with 4+ years of experience at the intersection of cutting-edge research and enterprise deployment. Specialized in designing autonomous agentic systems (Deep Reinforcement Learning, LLMs) and translating complex business requirements into robust, scalable AI solutions. Native French / Fluent English. Highly autonomous, comfortable navigating ambiguity, and experienced collaborating with both technical and non-technical stakeholders.

Professional Experience

PhD Researcher / Applied AI Engineer – INSA Lyon / SPIE ICS

Nov 2023 – Present | Lyon, France

- Enterprise AI Deployments:** Partnered directly with hospital stakeholders to deploy autonomous monitoring systems, translating complex clinical requirements into robust technical artifacts.
- Autonomous Agent Design:** Designed and built RL agents (PPO, A2C, Double DQN) operating in fully unsupervised and semi-supervised environments, with novel reward mechanisms based on ensemble learning and fuzzy-clustering signals.
- End-to-End ML Pipelines:** Data ingestion, feature extraction, representation learning (Autoencoders, Contrastive Learning) and evaluation – integrated MLflow for experiment tracking and reproducibility.
- Production Infrastructure:** Shipped high-availability inference services via dockerized REST APIs within constrained healthcare enterprise IT environments.
- Applied Research:** Continual learning, online adaptation, and dynamic policy optimization; 3 publications (KES 2025, CSNet 2024, KES 2026).
- Mentoring:** Supervised engineering interns and led code reviews.

Stack: Python, PyTorch, TensorFlow, Gymnasium, Stable-Baselines3, MLflow, Docker, PostgreSQL

Software Engineer – Devoteam

June 2022 – Sept 2023 | Levallois-Perret, France

- Technical Consulting:** Acted as a technical consultant to enterprise clients, identifying business challenges and delivering tailored software solutions on the ServiceNow platform to streamline client workflows.
- Conversational AI:** Developed and shipped a production voice AI assistant for field technicians, integrating NLP pipelines, speech recognition, and task automation.
- Federated Learning:** Implemented a privacy-preserving federated learning system for distributed model training in constrained client environments.

Stack: Python, TensorFlow, Flask, Rasa, VOSK

Full-Stack Software Engineer – ETIC (INSA Lyon)

Sept 2021 – April 2023 | Lyon, France

- Designed and shipped a high-availability full-stack application for a national transport company.
- Built high-throughput backend data pipelines and managed cloud infrastructure (AWS Elastic Beanstalk).

Stack: Angular, Flask, PostgreSQL, AWS Beanstalk

Data Scientist Intern – Worldline

April – Aug 2021 | Villeurbanne, France

- Processed large-scale financial datasets for fraud detection model training.
- Built data pipelines and interpretability dashboards for business stakeholders.

Stack: Pandas, Scikit-learn, SQL

Education

INSA Lyon – M.Eng. Computer Science & Telecommunications | 2019 – 2022

Top 5% of graduating class. Coursework: Machine Learning, Deep Learning, Reinforcement Learning, Distributed Systems.

National University of Singapore (NUS) – Exchange Program, School of Computing | 2022

Focus: Computer Security, Feature Engineering, Information Retrieval.

Research & Publications

- Comprehensive Comparison of Streaming Clustering-Based IDS** – KES 2025
Bilel Saghrouchni, Frédéric Le-Mouël, Bogdan Szanto
- Towards An Unsupervised Reward Function For A Deep RL Based IDS** – CSNet 2024
Bilel Saghrouchni, Frédéric Le-Mouël, Bogdan Szanto
- Deep reinforcement learning for continuous intrusion detection using unsupervised fuzzy clustering-based rewards** – KES 2026
Bilel Saghrouchni, Frédéric Le-Mouël, Bogdan Szanto

AI & LLM Projects

ask_zotero – RAG on Academic Library

Production-ready RAG system to query and synthesize scientific literature. Vector embeddings, LLM retrieval pipelines, advanced prompt engineering. (*LangChain, Streamlit*)

ExplainMe – LLM Content Generator

Automated LLM-based tool for generating explanations and summaries. Agentic workflow chaining and output reliability evaluation.

Data Explorer – Interactive ML Tool

Interactive dataset exploration and preprocessing interface for ML engineers.

Skills

AI & Machine Learning

Deep Learning, Reinforcement Learning (PPO, A2C, DQN), Representation Learning, Agentic Systems, Continual Learning, Online Learning

LLM & Generative AI

RAG, Prompt Engineering, LLM Applications, Agent Orchestration – Active interest in: SFT, RLHF, PEFT, Synthetic Data Generation

Engineering & Deployment

Python (expert), PyTorch, TensorFlow, Scikit-learn, Docker, REST APIs, MLflow, PostgreSQL, AWS

Languages

French (native) – English (fluent)

Awards

- 1st Prize (National) – Devoteam Devogame (AI & Innovation, 2021)
 - 3rd Prize – Hackathome by Accenture (combinatorial optimization, 2022)
 - 3rd Prize – Safran Black Out Challenge
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Interests

- AI education & content creation (podcast, blog)
- Judo – Black Belt, 18 years, national competitor, referee
- Photography