
Research topics	AI, LLMs
Position (M/F)	- PhD, thesis offer;
Reference offer	DS/PP/LLM/012026
Research Department	- Data Science (DS)
Publication date	08/01/2026
Start date	ASAP
Duration	PhD, thesis offer Duration of the thesis: 36 months
Description	

Tool-Augmented LLMs for Enterprise Data AI

Enterprises are turning to LLMs for high-stakes, data-driven decisions over structured data, such as databases and knowledge graphs. This PhD sets a three-year agenda to build and validate thinking-with-tools, an approach where the model embeds live tool use (e.g. SQL/SPARQL, Python) inside its reasoning. Beyond accuracy gains, the goal is an efficient decision system that knows when it's unsure, asks for clarification, and escalates when judgment matters. Consider the question: "If we cut Product X's price by 5% next quarter, what revenue should we expect?", the system reasons, pulls the right numbers, exposes its assumptions, and invites a human to confirm or adjust when needed. This aligns with broader research priorities on human-AI decision support and governance in complex settings.

We will keep an open, comparative stance: tool-augmented reasoning is a promising solution, not a foregone conclusion. A core part of the PhD is to demonstrate, on company data and realistic scenarios, when it surpasses agentic pipelines (LLMs orchestrating tools step-by-step) in terms of quality of the solutions, efficiency, costs and their trade-offs.

You will design the framework, fine-tune open LLMs to plan and run safe, efficient tools, and develop policies that balance accuracy, cost, and latency. This includes building a sandbox reflecting enterprise schemas; craft training traces that interleave reasoning and tool calls; and prototype realistic Aily Labs use cases (e.g., forecasting and customer insights).

Examples of possible research outcomes are: a cost-aware reasoning optimizer that learns when/how to invoke tools; typed, auditable traces and human-in-the-loop mechanisms (uncertainty, clarification, escalation); and budget-aware routing that adapts across schemas and tasks. Impact will be measured with clear evaluations of accuracy/latency/cost trade-offs, robustness to schema evolution, and governance considerations.

Environment. In this industrial PhD you'll be hired by Aily Labs and embedded with product/data teams in Barcelona/Madrid (Spain), while enrolled at EURECOM under Prof. Paolo Papotti supervision. Duration 36 months; working language English.

Requirements

- Education Level / Degree :Master
- Field / specialty: Computer Science
- Technologies /Languages / systems: Strong background in ML/NLP and databases (SQL/DBMS/KGs); solid Python and experimentation. Experience with LLM fine-tuning, text-to-SQL, tool use/agents, or RL is a plus.

- Other important elements: Applications reviewed on a rolling basis. Interviews start in early January 2026.

Application

The application must include:

- Detailed curriculum
- Motivation letter of two pages also presenting the perspectives of research and education,

Applications should be submitted by e-mail to secretariat@eurecom.fr with the reference : DS/PP/LLM/012026

About EURECOM

EURECOM is a major Engineering School and a Research Center in digital sciences founded in 1991 as a consortium in the international technology park of Sophia Antipolis. The IMT is a founding member of the GIE. Teaching and research activities are organized around 3 promising fields: digital security, communication systems and Data Science.

EURECOM has a staff of 190 (researchers and support teams) and welcomes 400 international students on the Campus Sophia Tech, the largest information science and technology campus of the region. EURECOM enjoys a privileged geographical environment on the French Riviera (Côte d'Azur), between sea and mountains, at the heart of a dynamic and multidisciplinary ecosystem that promotes high-level scientific and technological innovation.

Social advantages

- International and multicultural environment
- Attractive salary - Corporate saving plans
- Private retirement plan (executive, employer participation of 100%)
- Employee profit sharing policy
- Company health insurance (mutuelle) with high levels of guarantees for the whole family (employer participation of 60%)
- Restaurant vouchers (employer contribution of 60%)
- Corporate and Social Council (CSE)

EURECOM is one of Europe's leading engineering schools specializing in digital technologies. It is located in the heart of the Côte d'Azur, in Europe's Silicon Valley (Tech Park Sophia-Antipolis). EURECOM's research teams work in an international, multicultural environment.

EURECOM has a dynamic policy in terms of **inclusion and quality of life at work**. We are committed to diversity and give equal consideration to all applicants, without discrimination. Above all, we look for competence and team spirit.

All our positions are open to **people with disabilities**. EURECOM has set up a disability advisor to provide support and advice, organize accommodation and make positive commitments to personal integration.

As part of its **gender equality plan**, EURECOM encourages gender diversity within its teams. As part of our gender equality action plan, we encourage male applications for administrative positions, traditionally held by women, and female applications for IT and research positions, traditionally held by men.

EURECOM is taking positive action as part of its **CSR policy**. A CSR representative oversees EURECOM's CSR and energy transition policies (electric charging stations, solar panels, waste sorting, etc.).

Web site EURECOM: <https://www.eurecom.fr/fr/eurecom/presentation>

EURECOM in VIDEO: <https://www.youtube.com/watch?v=ullFcgnNjN>

Employee experience:

<https://www.youtube.com/watch?v=BHv9zlduzuQ>