

Press Release

The ULiège–NRB AI Chair Delivers Its First Results!

With TreeFinder, LLM-based AI becomes auditable, traceable and trustworthy.

Liège, 18 October 2025

Barely a year after its creation, the NRB–ULiège Artificial Intelligence Research Chair is already delivering promising results.

Researchers from the University of Liège and NRB are unveiling TreeFinder, an innovative method that makes large language models (LLMs) traceable, verifiable and auditable — a major step towards more transparent and responsible AI.

Context: a chair designed to bring research and industry closer together

Signed in July 2024, the NRB–ULiège AI Chair was born from a shared ambition: to accelerate the adoption of ethical, high-performance artificial intelligence serving businesses, the public sector and society.

Created within ULiège’s Faculty of Applied Sciences, the Chair focuses on research and development of LLMs applied to software engineering.

Its aim: to turn scientific breakthroughs into concrete solutions that optimise business processes, strengthen competitiveness and foster innovation.

“This chair between NRB and ULiège is undoubtedly a model partnership between industry and academia. It fuels fundamental research and enables NRB to reach new markets.”

— Professor Damien Ernst, co-holder of the NRB–ULiège Chair

TreeFinder: opening the ‘black box’ of LLMs

Developed through this collaboration, TreeFinder addresses a major challenge: the traceability of answers generated by large language models.

Until now, LLMs have functioned as “black boxes”, making it difficult to understand how they produce certain outputs — an issue of critical importance in sensitive fields such as healthcare, law or finance.

LLMs often miss key phrases in long contexts, get distracted by noise, and produce hard-to-verify answers.

TreeFinder changes this.

This simple, model-agnostic method identifies the precise sentences in a long document that actually influenced the model's final response.

The result: more reliable, auditable and certifiable question-answering systems capable of explaining *why* they respond the way they do.

“LLMs deliver impressive performance, but significant challenges remain to make them auditable and trustworthy. Thanks to our collaboration with NRB, we were able to develop a method that brings theoretical research closer to the concrete needs of industry.”

— Lize Pirenne, researcher at ULiège and co-author of TreeFinder

How does it work?

TreeFinder relies on two core principles:

- **Sufficiency:** with only the identified sentences, the model retains almost the same probability of producing the same answer.
- **Necessity:** if those sentences are removed from the context, the probability drops sharply.

By combining these signals, TreeFinder isolates the sentences that *truly matter* in generating the answer, filtering out noise.

This fast and precise hierarchical method enables:

- instant auditing of AI-generated answers,
- verification of consistency and detection of bias,
- strengthened compliance and certification processes.

Examples:

- In medicine, TreeFinder can justify a clinical summary using the exact sentences from a patient's file.
- In law, it can link an answer to specific passages in a contract or ruling.
- In industry, it secures internal AI systems by showing which sources influenced a given response.

A win-win partnership

“Working with NRB has been a source of inspiration. It helped us identify real-world issues in AI deployment and address them using fundamental research. A genuine synergy emerged between researchers and engineers to turn these challenges into innovation.”

— Lize Pirenne, ULiège

“The major technological, economic, educational and ethical challenges we face can only be tackled by joining forces.

This Chair embodies the power of open ecosystems and long-term collaboration between

academia and industry.”

— Laurence Mathieu, CEO of NRB

This initiative illustrates the value of cross-collaboration between universities and companies: a true win-win model, where research gains real-world use cases and industry benefits from rigorous scientific expertise to build trustworthy solutions.

Sources

“Contributive Attribution for Question Answering via Tree-based Context Pruning”

Work by Lize Pirenne, Gaspard Lambrechts, Norman Marlier, Maxence de la Brassinne Bonardeaux, Gilles Louppe and Damien Ernst, with the support of Wallonia and the NRB Research Chair on LLMs.

 Open-source code on GitHub:

 github.com/Pangasius/TreeFinder

About NRB

With a turnover of €638.3 million in 2024 and more than 3,670 employees, the NRB Group is one of Belgium’s leading ICT players. It supports European private and public organisations in all their technological needs, relying on strong in-house expertise, a robust ecosystem and a sovereign approach. NRB S.A. integrates complete solutions around six key areas: Infrastructure, Mainframe, Software, AI & Data, Cybersecurity and Digital Consulting. The Group serves large companies, the healthcare sector, local authorities, SMEs and public institutions. NRB shapes the digital future of a more connected, secure, inclusive and sustainable society by placing technology at the service of daily life.

More information available at: www.nrb.be

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