Irina Proskurina

Senior NLP Research Scientist | LLM Research & Engineering

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Profile

Senior NLP Research Scientist with over five years of research experience in NLP. PhD in Computer Science (Université de Lyon). Research interests: **LLM compression and efficiency, uncertainty estimation, and synthetic data generation**. Developed **Fair-GPTQ** (TACL 2026) and **Debias-SparseGPT** (EMNLP 2026); author of **10+ peer-reviewed publications**.

Technical Skills

Python, PyTorch, Hugging Face Transformers, Accelerate, vLLM, NumPy, pandas, SciPy, scikit-learn, TensorFlow, Git, Docker, multi-GPU computing, HPC.

Research Expertise: NLP, LLMs, model compression, quantization, pruning, mathematical statistics, statistical analysis.

Professional Experience

Hubert Curien Laboratory, Jean Monnet University Oct 2025 – Present
Senior Research Engineer *Saint-Étienne, France*

- Led research on **model collapse** under recursive training on synthetic data, investigating model performance degradation across successive training generations.
- Developed **Debias-SparseGPT**, a new pruning (sparsification) method; presented at *EMNLP 2026*.

ERIC Laboratory, University of Lyon Oct 2022 – Oct 2025
Doctoral Researcher / NLP Research Scientist *Lyon, France*

- Developed **Fair-GPTQ**, a new quantization method designed to mitigate the impact of compression on model safety, published in *TACL* (Q1 journal); studied the effects of quantization on model confidence and calibration, with results presented at *NAACL 2024*.
- Conducted large-scale experiments on LLM quantization and pruning using HPC resources, including the Jean Zay supercomputer.
- Researcher in the French ANR **Diké** project on language-model safety; collaborated with NAVER LABS Europe and Télécom Paris. Co-organized **EALM** (Ethic and Alignment of (Large) Language Models) workshop at CORIA-TALN 2025.

ERIC Laboratory, University of Lyon Apr 2022 – Sep 2022
Research Fellow *Lyon, France*

- Conducted research on structured pruning of Transformer models by removing entire layers to reduce model size and computational cost.

HSE University, Computational Pragmatics Laboratory Aug 2021 – Mar 2022
Junior Research Fellow *Moscow, Russia*

- Investigated the topology of Transformer attention maps using topological data analysis and persistent homology to study linguistic acceptability judgments, resulting in a publication at *EMNLP 2022*. Conducted research in collaboration with researchers from Huawei Noah's Ark Lab, Skoltech, AIRI, and SberDevices.

HSE University, Learner Corpora Laboratory Feb 2021 – Dec 2021
Research Intern / Project Lead *Moscow, Russia*

- Led research and development of **ADWISER**, an English learner grammatical-error detection system based on dependency-tree matching using spaCy. Collaborated with the **JetBrains Grazie** team on rule-based error detection and co-supervised six student research internships.

Selected Research Projects & Open Source

Fair-GPTQ | Website | TACL 2026 2026

- Bias-aware post-training quantization for LLMs with group-fairness constraints in the rounding objective.

Debias-SparseGPT | Website | EMNLP 2026 2026

- Pruning method incorporating a second-order debiasing term; evaluated unstructured and 2:4 sparsity against model quality and fairness metrics.

Cohere Labs Open Science Community | Paper 2026

- Led a collaborative research project investigating the effects of instruction tuning on model confidence and lexical diversity; the paper presented at *UncertaiNLP @ EMNLP 2026*.

Open Diké Leaderboard | GitHub 2026
– Developed an open evaluation leaderboard for safety evaluation of compressed language models, released as software within the ANR Diké project.

BabyLM Challenge | Paper 2023
– Participated in the BabyLM 2023 shared task, developing and evaluating two compact language models, Bebeshka and Zlata; presented the paper *Mini Minds: Exploring Bebeshka and Zlata Baby Models* at the CoNLL 2023 workshop.

Selected Publications 10+ peer-reviewed publications; full list on Google Scholar

- **Debias-SparseGPT: Bias-Aware Pruning for Large Language Models.**
  Irina Proskurina, Guillaume Metzler, Antoine Gourru, Julien Velcin. *EMNLP 2026.* [paper]
- **Fair-GPTQ: Bias-Aware Quantization for Large Language Models.**
  Irina Proskurina, Guillaume Metzler, Julien Velcin. *TACL 2026.* [paper]
- **When Quantization Affects Confidence of Large Language Models?**
  Irina Proskurina, Luc Brun, Guillaume Metzler, Julien Velcin. *NAACL 2024.* [paper]
- **Acceptability Judgements via Examining the Topology of Attention Maps.**
  Daniil Cherniavskii*, Eduard Tulchinskii*, Vladislav Mikhailov*, **Irina Proskurina***, et al. *EMNLP 2022* (*equal contribution). [paper]

Research Initiatives & Collaboration

- **Lyon NLP Connect:** Founded and organized a cross-institution research community for NLP researchers in Lyon, arranging research talks, tutorials and exchanges between laboratories and research teams.
- **Cohere Labs Open Science Community:** Led a collaborative research project on the effects of instruction tuning on model confidence, likelihood-based calibration and lexical diversity.
- **Research service:** ACL Rolling Reviewer (since 2023); reviewer for *Natural Language Processing* (Cambridge University Press), the BabyLM Shared Task (CoNLL 2023), and workshops co-located with *CL conferences; co-organizer of EALM at CORIA-TALN 2025.

Teaching & Student Supervision

- **University of Lyon II (2023–2025):** Lectures and practical classes for graduate students in Applied Deep Learning (M2) and Applied NLP (M1), Introduction to Research seminars (M1).
- **Research mentoring:** Supervised four master's research projects on quantized LLM evaluation, hate-speech detection, and text detoxification; held weekly research meetings and reviewed experimental results.
- **HSE University (2021–2022):** Co-supervised research internships in grammatical-error detection; designed a practical assignment and delivered a seminar comparing rule-based and neural approaches to grammatical-error correction.

Education

University of Lyon 2022 – 2026
PhD in Computer Science (defended 5 March 2026) *Lyon, France*
– Thesis: *Towards an Unbiased Compression of Large Language Models.* Supervisors: Julien Velcin (École Centrale de Lyon) and Guillaume Metzler (University of Lyon II).

HSE University / University of Clermont Auvergne 2020 – 2022
Double-degree MSc: Data Science (HSE) *Russia / France*
– Ranked among the top three students in the HSE Data Science master's cohort.
– HSE master's thesis: *Topological Data Analysis in Grammatical Error Correction*; advisor: Ekaterina Artemova.
– UCA master's thesis: *Predicting the Impact of Intervention Strategies on COVID-19 Trajectory*, involving statistical modeling; advisor: Hamed Rahimian (Clemson University, USA).

Selected Talks Full list of talks on the website

- **2025:** *Compression-Induced Biases in Large Language Models* (EALM @ TALN); *Topological Data Analysis in NLP* (University of Brescia).
- **2024:** *Calibration of Quantized Large Language Models* (NAVER LABS Europe).

Honors & Awards

- **HSE Excellence Scholarship** - Higher School of Economics, awarded for academic excellence and research achievements.
- **LabEx Scholarship** - French research scholarship awarded for academic excellence.

Languages: Russian (native) | English (C2) | French (B2)