

## RESEARCHER IN MULTIMODAL LATENT REASONING ARCHITECTURES

The Lamarr Institute is one of Germany's six AI Centers of Excellence and focuses on the research and development of high-performance, trustworthy, and resource-efficient applications of Machine Learning (ML) and Artificial Intelligence (AI).

The Foundation Models Research Lab (FMR-Lab), led by Dr. Mehdi Ali, is seeking one or more highly motivated researchers to advance multimodal latent reasoning architectures for next-generation of foundation models that reason implicitly across multiple modalities, such as text, vision, video, and structured representations such as knowledge graphs to work at the Lamarr Institute location at the University of Bonn.

The research focuses on latent reasoning architectures that enable models to reason over modality-rich inputs, iteratively refine internal representations, effectively attend to relevant events in long multimodal sequences, and support robust long-horizon reasoning.

The FMR-Lab is actively involved in large national and international initiatives on European foundation models, including **TrustLLM**, **OpenEuroLLM**, and **SOOFI**. These projects include training large-scale models from scratch using thousands of GPUs and several million GPU hours.

The lab closely collaborates with further research areas within the Lamarr Institute.

### Research Topics

- Multimodal latent reasoning architectures combining text, vision, video, and structured data (e.g., knowledge graphs)
- Looped architectures
- Adaptive computation and dynamic inference per sample
- Compact and resource-efficient latent reasoning models
- World modeling and planning in real-world environments

### Requirements

- Excellent master's degree or PhD in computer science, mathematics, physics, or a related field
- Deep understanding of machine learning
- Excellent programming skills, especially in Python and PyTorch
- Basic understanding of distributed machine learning
- Ability to collaborate in teams

## What to Expect

- Top-level research within a first-class research environment
- Support for your individual development
- Highly collaborative team environment
- Access to state-of-the-art infrastructure for effective training of foundation models
- Participation in pioneering national and international projects on foundation models, including TrustLLM, and SOOFI

## Application

If you are interested in this challenging and forward-looking research, please send your complete application documents (CV, cover letter, and relevant certificates) to [doelp@iai.uni-bonn.de](mailto:doelp@iai.uni-bonn.de). We look forward to welcoming talented and dedicated researchers to our team. Applications will be reviewed on a rolling basis until all positions are filled.

## Position:

**PhD Position or Postdoc:** TV-L E13 100%

**Duration:** 3 years

**Start date:** Flexible, preferable 1 May 2026

**Location:** Bonn, Germany

We value and actively promote diversity in our team and therefore welcome all applications – regardless of age, gender, nationality, ethnic and social background, religion, worldview, disability, sexual orientation, or identity. Applications from women and non-binary candidates are explicitly encouraged. Applicants with severe disabilities will be given preference in the case of equal qualification and professional performance. Our tasks are diverse and adaptable – for applicants with disabilities, we will jointly find solutions that optimally foster their abilities.

For questions about this position, please contact the Lamarr Institute Managing Director at the University of Bonn, Dr. Brendan Balcerak Jackson ([bbalcera@cs.uni-bonn.de](mailto:bbalcera@cs.uni-bonn.de)).