

## Vacancy AI & Data Analytics (AIDA) Group @ Ghent University

The AIDA group is seeking a motivate candidate for a **fully funded four-year PhD student position** at the intersection of AI/Machine Learning and Data Visualization.

Our group conducts internationally top research in AI in the areas of AI/machine learning and knowledge discovery. An overview of our group and research portfolio can be found at <https://aida.ugent.be>. We are looking for a candidate for the following project:

**Inductive methods for dimensionality reduction and visualization of large & complex data.** Algorithms such as t-SNE, UMAP, and MDS are widely employed to create low-dimensional embeddings of data, enabling visualization of the top-level structure of that data. This has become common practice also in some subfields of science, such as single-cell biology, where this visualization enables us to study biological processes in detail.

Although useful already, non-parametric (=transductive) methods such as t-SNE inherently lack interpretability and scalability. In this project, you will study the advantages and disadvantages of current parametric and non-parametric methods for visualization of complex data. The aim is to develop new scalable parametric methods combining the advantages of both, for diverse types of data. Applications may include single-cell data. Secondly, new algorithms or techniques to enhance the interpretation and explainability of the method and the resulting embeddings would be welcome extra's.

Funding for this position comes from the Flanders AI Research (FAIR) programme (<https://www.flandersairesearch.be/en>). Other funding sources for our group include the European Research Council, FWO, VLAIO, and Ghent University.

### Your profile

You will need to hold a **master's degree** in a relevant area **with demonstrated first-class performance** (e.g., outstanding grades, thesis result, or publications). Ideal candidates **demonstrate mastery of the core aspects of machine learning**:

- Fundamentals of probability and statistics
- Algorithm design, discrete/continuous optimisation
- Programming (in Python, C++/Java, JavaScript, ...)

Experience with data visualization, user interfaces, and/or cell biology is a plus.

### The research environment

The research will be supervised by Prof. Jeffrey Lijffijt and Prof. Tijl De Bie of AIDA, with possible collaboration with Prof. Yvan Saeyns and the DAMBI research group (<https://www.dambi.ugent.be/>). We are an **engaging international team** with a **track record in world-leading research**. The AIDA group is part of Ghent University IDLab.

Ghent University is a comprehensive **internationally leading research-intensive university**. **English is the working language**; knowledge of Dutch or French is not required. The university also offers a wide range of courses for skills professionalization. Ghent is a **historical, vibrant, and internationally minded city** in Belgium with 260k inhabitants.

### Further info & application procedure

**Applications may be sent by email** to [jefrey.lijffijt@ugent.be](mailto:jefrey.lijffijt@ugent.be). Please include a motivation letter, CV, and contact details of 1 to 3 referees. Do not include reference letters, these will be solicited by us. Please mention which project you are interested in. Suitable candidates will be invited for an interview. Please apply by Tuesday October 15, 2024. Late applications can be considered until the position is filled.



<https://aida.ugent.be>



<https://www.ewi-vlaanderen.be>



European Research Council

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<https://erc.europa.eu/>



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<https://en.wikipedia.org/wiki/Ghent>