

PhD Offer

Reproducible and immersive 3D Storytelling for Cultural Heritage

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University: Université Paris-Saclay (UPSaclay), INRIA Saclay, LIRIS Laboratory (CNRS UMR 5205)

Place of work: Paris area (Inria Saclay) with possible travel to Lyon as needed by the project.

Date of recruitment: 1 September 2025

Duration: 36 months (3 years)

Keywords: Immersive visualization, 3D urban environments, knowledge representation, multidimensional data, temporal evolution, reproducibility

Objectives

The main goal of this thesis is to design, implement and evaluate tools to explore cultural heritage documents in their spatial context and the relationships among them. They will be targeted to domain-experts and the general public.

This project is part of the ANR AGAPE project that includes tasks on the modeling and visualization of the cultural heritage documents datasets. These researches will be guided by joint development around previously created platforms using agile methods; it will produce reproducible proofs of concept, based on standards, and available as open-source, in collaboration with a transversal engineer who will oversee this orchestration.

Scientific challenges related to the project

In this thesis, several challenges are identified:

- Study and creation of interactive tools for the exploration of these objects in their spatial context, by designing novel visual representation and interaction techniques in ways that do not overwhelm users (e.g., semantic zooming).
- Design of effective means to integrate in these tools the evolving links among cultural entities in their 3D geographic context.

- Making the multimodal content engaging enough to reach the general public (e.g., storytelling approaches) and collecting insights on how they use them.

Technical challenges related to the project

- Ability to propose prototypes to demonstrate the feasibility of the proposed approaches based on platforms such as:
 - HyperStorylines (<https://gitlab.inria.fr/ilda/hyperstoryline>)
 - Geo-Storylines (<https://gitlab.inria.fr/ilda/geo-storylines>)
 - UD-SV (<https://github.com/VCityTeam/UD-SV/>) platforms
 - LIRIS Pagoda (<https://projet.liris.cnrs.fr/pagoda/latest/>)
- Ability to propose the necessary tools for use by non-data scientists.

Requirements for Applicants

Basics of Human-Computer Interaction, and skills in interaction design. Additionally, the candidate should have some basic programming skills in languages like Javascript, Python, HTML, CSS, knowledge in data science pipelines and scientific workflows.

Application process

Interested candidates should send an email to vanessa.pena-araya@inria.fr, john.samuel@cpe.fr, anastasia.bezerianos@universite-paris-saclay.fr, and gilles.gesquiere@univ-lyon2.fr before **May 31, 2025**, with the following:

1. CV
2. Motivation letter
3. Academic transcripts
4. List of publications (if any)
5. 2 reference letters (or persons to contact)