

## 1 Information about the internship

- **Supervisors:**
  - [Anne-Valerie PONT-BOULAY](#), associate professor in Roman History, UMR 8167 Centre Antiquité Classique et Tardive, Sorbonne Université
  - [Victoria EYHARABIDE](#), associate professor in computer science, STIH Laboratory, Sorbonne Université
- **Location:** Maison de la Recherche, Sorbonne Université - 28 rue Serpente, 75006 Paris.
- **Duration:** 24 months (possibility to be extended up to 5 years).
- **Keywords:** Digital humanities, knowledge representation and reasoning, knowledge graphs, Roman history.
- **Project:** ERC Consolidator Grant **PECUNIA** – *Private interests in public functions: Framing a new paradigm of power in the cities of the Roman empire (70 BC-284 AD)* (Grant number: 101088477).
- **Environment:** The PECUNIA project also benefits from the infrastructure of the **Sorbonne Center for Artificial Intelligence (SCAI)**.
- **Remuneration:** €2905 or more depending on experience.
- **Start date:** The position is available from February 1<sup>st</sup>, 2024.

## 2 Project background

The **PECUNIA** project – *Private interests in public functions: Framing a new paradigm of power in the cities of the Roman empire (70 BC-284 AD)*, funded by an ERC Consolidator Grant (2022), aims to study the economic and material resources provided by participation in public life to different elite groups in the cities of the Roman Empire. The objective is to create analytical tools to study the resources, institutions, and social groups involved in their functioning. Over five years, this project will bring together historians, epigraphists, papyrologists, and computer science researchers. We will bring together thousands of sources from the Roman Empire (written, both epigraphic and "literary" sources, mainly in Latin and Greek) and then structure these data (geolocation, bibliographic references, prosopographical data, institutional position, and available resources) in the context of Linked open data.

The final objective aims to offer to different specialist audiences, in addition to access to the data themselves, a new tool allowing to quantify, visualize, and model them using knowledge graphs.

## 3 Job description

The candidate's main objective will be to develop and implement computational solutions for creating a domain-specific knowledge graph gathering historical data. The candidate will build the knowledge base by adapting the [Patrimonium](#) editor designed at Ausonius (Bordeaux) and create a knowledge graph to depict and explore the relations that underlie the distribution of the financial and material resources available through institutional positions in the cities of the Roman Empire. The candidate will work in close collaboration with researchers in history and epigraphy to find the best solutions to implement the database of the project and curate data. Finally, the candidate will design innovative user interfaces for displaying and querying the knowledge base. The candidate will be under the supervision of PECUNIA's project PI, Anne-Valérie Pont, and of Victoria Eyharabide, a specialist in Computer Sciences; the candidate will also have the opportunity to benefit from the scientific context of the **Sorbonne Center for Artificial Intelligence (SCAI)** and regular interactions with its researchers. The ambition of SCAI is to contribute significantly to the excellence of interdisciplinary research and education in artificial intelligence by promoting exchanges between researchers, students, and industry.

## 4 Profile of applicant

Applicants are required to have:

- A Ph.D. in Computer Science or Digital Humanities. Doctoral students about to graduate (before the end of 2023) are invited to apply!
- Advanced skills in Python programming are mandatory.
- Strong background in two areas of artificial intelligence: semantic web technologies (ontologies, reasoning models, linked data, SPARQL) and automatic learning of graphs and vector representations.
- Fluency in written and spoken English is essential.
- Excellent communication skills to discuss with researchers from different backgrounds (mainly historians and epigraphers).

Ideally, we are also searching for candidates with the following desired qualifications:

- Documented experience in the implementation of machine learning methods for the analysis of knowledge graphs.
- Expertise in technical aspects related to data sharing, database systems, linked data/RDF, knowledge graphs, data semantics, and inference engines is desired.
- Experience in knowledge open-source tools for knowledge graphs such as Neo4J RDF Semantic Toolkit, RDF4J, and GraphDB.
- Communication skills in French are a plus but not required.

The position is open immediately. Review of applications will begin as soon as applications are received and continue until the position is filled.

## 5 Application

Applicants should send an email to [Victoria Eyharabide](mailto:maria-victoria.eyharabide@sorbonne-universite.fr) [maria-victoria.eyharabide@sorbonne-universite.fr](mailto:maria-victoria.eyharabide@sorbonne-universite.fr) and [Anne-Valerie PONT-BOULAY](mailto:anne-valerie.pont-boulay@sorbonne-universite.fr) [anne-valerie.pont-boulay@sorbonne-universite.fr](mailto:anne-valerie.pont-boulay@sorbonne-universite.fr) with:

- A full curriculum vitae including a complete list of publications
- A transcript of higher education records
- A one-page research statement discussing how the candidate's background fits the proposed topic
- Two support letters from persons who have worked with them.