Type d'offre : Laboratory offer

Post date : 05.01.26

LISN, CNRS, Université Paris-Saclay

M2 Master Thesis Proposal - Semantic Patient Profiling for Infectious Diseases

Informations générales

Contract length : 6 months

Education level : Master 2

Contact :

[Nacera Seghouani](#)
[Yue Ma](#)

Starting date : Sun 01/03/2026 - 12:00

Trade : PhD

Topic : Autre

Précisez : Semantic Patient Profiling for Infectious Diseases

LISN, CNRS, Université Paris-Saclay :

The [Interdisciplinary Laboratory for Digital Sciences](#) (LISN) aims not only to contribute to the advancement of knowledge, but also to respond to the multiple societal challenges of the National Research Strategy (SNR).

Détail de l'offre (poste, mission, profil) :

Abstract

Advances in evidence-based medicine rely on the ability to access, analyze, interpret, and apply reliable knowledge to guide timely diagnosis and treatment. However, the vast and ever-growing volume of medical data, often incomplete, uncertain, and heterogeneous, makes it difficult for clinicians to identify information most relevant to each patient's condition. This growing challenge highlights the need for intelligent reasoning systems that can integrate diverse evidence sources and generate personalized recommendations, supporting rapid, accurate, and context-aware clinical decisions. Notably, certain infectious diseases represent a particularly critical domain where such capabilities are essential, given its complexity, urgency, and high mortality rates. By exploring of cutting-edge methods, we have identified a critical gap: the lack of advanced, semantics-based methods capable of modelling sepsis-related knowledge to support decision-making in sepsis diagnosis and treatment. This internship is towards the solution of this issue. We will address the challenge, multi-modal modelling of clinical data [2], through different steps: identifying ontological terminologies for patient profile usage; analysing user profiling using semantic (sparql) queries and advanced KG embeddings [4]; and constructing logical representation of evidences related to patient profiles. The purpose is to provide the end user with sound decision support [1,2,3,5] based on a rich representation of the relevant knowledge.

Duration

Six months (full-time, 2026). This master thesis internship will be followed by a PhD thesis as part of the project ANR IHU Sepsis (ex. Prometheus).

- **Requirement** : M2 student in Computer Science, Data/AI. Solid background in Knowledge Representation and Python/Java, autonomy, rigor, a good level of English, and teamwork.
- **Application** : Send CV, grades (at least the 3 previous years), and recommendation letters to nacera.seghouani@lisn.fr and yue.ma@lisn.fr with subject: "*M2 Internship application*".
- **Keywords** : Patient profiling, Knowledge graph, Generative AI, Argumentative reasoning, Knowl-
edge embedding, Infectious disease.

References

[1] Gabriel Freedman, Adam Dejl, Deniz Gorur, Xiang Yin, Antonio Rago, and Francesca Toni. Argumentative large language models for explainable and contestable claim verification. In AAAI, pages 14930–14939, 2025

[2] Anthony Hunter and Matthew Williams. Aggregating evidence about the positive and negative effects of treatments. Artif Intell Med., 56(3):173–190, 2012

[3] Said Jabbour, Yue Ma, and Badran Raddaoui. A framework for reasoning about uncertainty in ontologies. IEEE Intelligent Systems, 37(6):27–37, 2022

[4] Elisa Mariani, Nacéra Seghouani, and Yue Ma. A hybrid self-correcting approach for embedding ontology-based knowledge graphs. In Proceedings of the 40th ACM/SIGAPP Symposium on Applied Computing, SAC, pages 1156–1163. ACM, 2025

[5] Kawsar Noor, Anthony Hunter, and Astrid Mayer. Analysis of medical arguments from patient experiences expressed on the social web. In Advances in Artificial Intelligence: From Theory to Practice, pages 285–294. Springer International Publishing, 2017.

URL de l'offre :

https://nextcloud.lisn.upsaclay.fr/index.php/s/BfCPsTiw2TDD89S

Lien vers l'offre sur le site dataia.eu :https://da-cor-
dev.peppercube.org/node/1502