

Software Engineer (1-Year and 3 months Position) – INSERM U1136 CIPHOD team, Paris

Development of Causal Inference Packages in Python and R

Summary: We are hiring a software engineer for a 15-month position to develop two open-source packages—one in Python and one in R—implementing the core causal inference methods designed by our research team. These tools will provide a comprehensive suite of functionalities for causal discovery, causal reasoning, root cause analysis, and causal effect estimation. For more details about our methods check our website: <https://ckassaad.github.io/CIPHOD.html>. The packages will primarily target epidemiologists but will also be highly relevant to other domains such as AI, economics, climate science, and industry.

Responsibilities:

- Develop two separate software packages (one in Python and one in R) implementing a shared set of causal inference, causal reasoning, and root cause analysis methods developed by the team.
- Translate theoretical algorithms from published research into efficient, robust, and well-documented code.
- Collaborate with researchers to validate the implementation and test the methods using both simulated and real-world datasets.
- Ensure a user-friendly and modular design that supports future extensions and encourages community contributions.
- Create high-quality documentation, including tutorials and reproducible case studies, with a focus on applications in public health and epidemiology.
- Optimize the performance and scalability of selected methods, with the possibility of integrating C or C++ code for enhanced efficiency.

Lab location and description: The Pierre Louis Institute of Epidemiology and Public Health (co-accredited by Inserm and Sorbonne University) is located at the Sorbonne University Faculty of Medicine - Hôpital Saint Antoine in Paris. It is composed of six teams, in addition to the recently established CIPHOD “Causal Inference in Public Health using large Observational health Databases” team. The general research objectives of CIPHOD are to put forth novel theoretical findings and develop innovative methodologies in the realm of causal inference, with a focus on their applicability and utility for epidemiologists.

Contract: The contract will start in October 2025, for a duration of 15 months (renewable). The salary will be between €2,900 and €3,200 gross, subject to annual revaluation.

Candidat profile: Strong programming skills in Python and R. Experience in software engineering best practices: version control (Git), modular code design, unit testing. Familiarity with causal inference or statistical modeling is a strong plus. Bonus: Experience with C or C++ for performance optimization and method acceleration.

Contact: Candidates are requested to send their CV to Charles Assaad (charles.assaad@inserm.fr) by August 2025. For additional details, please reach out to the same email address.