



Doctoral Researcher

Computational Social Sciences / Computer Sciences

The LPI – University of Paris, is hiring a doctoral researcher to work on deep learning, algorithmic recommendations, social networks, and their impact in politics and society

#AI #RecommenderSystems #Interpretability #FilterBubbles #EchoChambers #Polarization #OpinionDynamics #Politics #GNN #NewsMedia #PartySystems #SocialNetworks

About LPI & the project

The [Learning Planet Institute](#) (LPI) is an interdisciplinary research unit of Université Paris Cité, developing diverse projects in themes ranging from systems biology to network sciences and complex systems. In the heart of Paris, the LPI brings together social scientists, biologists, designers, computer scientists, mathematicians and physicists among other disciplines, to develop research seeking high societal impact.

This position is part of an initiative to investigate the challenges wrought on democracies by the Internet and Artificial Intelligence, and to improve the understanding of the impact they have in society. The goal of the initiative is to improve the understanding and interpretability of AI systems that mediate social public life in social networks, media platforms, and online news outlets. How do Recommender Systems perceive and model the digital landscape of users and contents to recommend us friends and information? What is the relation between algorithmic recommendations mediating the activity in large internet platforms and the social phenomena such as echo chambers and polarization? This initiative relies on mathematical modeling, political science survey data, and computational experiments with Recommender Systems to develop actionable theories of machine social cognition and tool kits to analyze models learned and leveraged by AI architectures.

This initiative is set in a highly interdisciplinary environment, including sociologists, political scientists, computer scientists, and mathematicians.



Key research themes of the position

The doctoral researcher is expected to develop research in some the following themes:

- **Deep Learning interpretability and explicability:** We are interested in developing mathematical and software tools to map representations made by Machines Learning algorithms during training. As they are trained using existing social network and media platform data, Machine Learning algorithms will learn models representing these diverse data, inside the so-called *black box*. We are interested in methods to map these representations onto space on which to analyze them and make inferences about what is known by these systems. A case of particular interest is the assessment of latent social features inadvertently learnt by AI systems such as GNN recommenders when computing recommendations.
- **Recommender Systems:** We are interested in research on AI Recommender Systems, trained on social network data for friends recommendation, or in information consumption for news recommendations. In particular, we are interested in conducting experiments, training systems for friends and content recommendations (e.g., using GNN frameworks but also others such as matrix factorization recommenders) and exploring AI interpretability methods. We are interested in setting up large-scale experiments with Recommender Systems from the state of the art, and developing toolkits to improve their design.
- **Social Network Analysis:** We are also interested in the models of opinions and opinion mining in social networks. We are particularly interested in studying the mechanisms through which opinions evolve, and their link with algorithmic mechanisms.
- **Computational political sciences:** We are interested in how configurations of political opinions (for example left-right cleavages, attitudes towards globalization, or towards climate change) on social networks affect opinion dynamics. We rely on a unique research program at the frontier between political sciences and computer science and mathematics.

Profile and skills

The hired doctoral researcher will conduct data analyses of social and media platform data and theoretical modelization work. It is also expected that the doctoral researcher will conduct experiments, training models, and develop software tools to further the understanding of AI systems and their social cognition.

We encourage students with a background in natural sciences and technology (e.g., engineering, computer science, mathematics, physics) to apply for the position. Applicants with different backgrounds and strong modeling and computing skills are also encouraged to apply.



The position

The doctoral researcher will join LPI in Paris and work under supervision of a team of researchers in computer science and political science. The doctoral researcher will also benefit from interaction with partner teams working on network science, as well as industrial partners.

This position is fully funded by the Learning Planet Institute for 36 months, starting **October 2022**.

To apply

Send a cover letter detailing your motivation and relevant skills for the position and a CV including all the information you deem relevant (for example publications/drafts if any, experience, relevant courses, code repositories) by March 4 2022 to receive full consideration. Please send your applications to pedro.ramaciottimorales@learningplanetinstitute.org .

Do not hesitate to contact us to inquire for further details.