

Post-Doctoral Positions Opening

Project OpLaDyn supported by the



Two one-year post-doctoral positions (topics “Modeling Opinion Dynamics and “Language Dynamics”) are open in the framework of the OpLaDyn project (*Understanding Opinion and Language Dynamics using massive data*), a recently selected project of the TransAtlantic Digging into Data Challenge,

<https://diggingintodata.org/awards/2016/news/winners-round-four-t-ap-digging-data-challenge>.

This is an international project in which a team with expertise in Data Science, Physics, Linguistics, Philosophy and Law aims to study problems in Human Social Sciences developing an interdisciplinary view of the relation between information patterns in Big Data and the dynamics of social actions, bridging the gap between Social and Natural Sciences.

Big Data technologies are changing the informational environment in which people live, keeping traces of their activities, merging behavior and decision-making processes of social actors. Based on textual data obtained from different media, we will study emerging patterns in social actions, focusing on opinion diffusion and language evolution.

In the framework of this project, the team has access to the historical database of The New York Times, which gathers documents covering over more than 150 years. These can be combined with modern databases like Twitter, in order to develop comparative studies on opinion and language dynamics.

Application procedure

Interested candidates should send a detailed CV, with full list of publications and participations to conferences, a motivation letter, and two reference letters. They may apply to one or both positions, in which case candidates are required to indicate an order of preference.

These documents should be sent by email to the contacts indicated below for each position.

Selection procedure

Applications will be analyzed by a joint committee by the last week of November. Preselected candidates will be contacted for an interview in the following week. Estimated starting date: January 2018.

OpLaDyn, Position A: Modeling Opinion Dynamics

By analyzing large bases of textual data we aim at extracting patterns of relevant information, in order to construct data based models of opinion formation and evolution.

This implies addressing, among others, the following questions:

- How can relevant information be obtained from the Big Data sources at disposal in order to build data based models of opinion dynamics? What is the role of the metadata in this endeavor?
- How can one infer the network of social contacts on the basis of these data?
- How can one capture opinion dynamics? Which parameters characterize the dynamical process? How these parameters depend on the type of media where opinion diffuses?



More specifically, using the NYT database, which runs over a long period (roughly from 1850 until now), we are interested in understanding how scientific topics of high societal impact migrate from the channels restricted to scientists to the public media and how this diffusion contributes to fashion the public opinion on those particular topics.

Requirements for this position

Candidates should hold a PhD in Physics or in Computer Science, with some knowledge in the area of social networks, opinion dynamics or information diffusion. She/he should have good modeling and programming skills. Some knowledge on data management and notions of cloud-based computing are also appreciated.

Working Place: The selected candidate will work at *Laboratoire de Physique Théorique et Modélisation* (LPTM) UMR8089 CNRS-UCP, <https://www.u-cergy.fr/fr/laboratoires/labo-lptm.html>, in collaboration with Laura Hernández (LPTM) and Dimitris Kotzinos, from *ETIS laboratory* of Cergy-Pontoise University (Paris-Seine University). She/he will benefit from the working environment of both laboratories and will take part in the activities of the OpLaDyn team.

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OpLaDyn, Position B: Language Dynamics



The task of this post-doc will be (i) to extract and analyze patterns of language evolution from historical corpora, focusing on phenomena of lexicalization and grammaticalization, and (ii) to improve existing models of language change. The goal is to test out existing hypotheses of language dynamics, such as drift or S-curves, against both language models and corpus data. The results will be presented at international conferences and published in peer reviewed interdisciplinary journals. The postdoc will have access to several large diachronic corpora (among which the NYT database), and will be encouraged to collect additional data by him/herself.

Requirements for this position

Candidates should have a PhD in (theoretical/statistical) Physics, Computer Science or Natural Language Processing (NLP), along with a basic knowledge of and a strong interest in language sciences. Alternately, they could have a PhD in linguistics, with advanced skills in programming and/or modeling. Good knowledge of English is mandatory.

Working Place

The post-doc will work at the Ecole Normale Supérieure (ENS, Paris) within an interdisciplinary environment, with members of two labs, Lattice <http://www.lattice.cnrs.fr/> (Linguistics) and LPS <http://www.lps.ens.fr/> (Physics), and in interaction with the other partners of the project.

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