

Bonjour,

Le laboratoire ERIC (Université de Lyon) propose un stage destiné à des étudiants en Master Recherche intitulé "Evolution of scientific domains: a longitudinal analysis". Même si la description du sujet est en anglais, l'étudiant évoluera dans un milieu mixte francophone et anglophone. Pouvez-vous communiquer cette proposition à vos étudiants ?

Le sujet est détaillé ci-dessous :

Master Thesis: Evolution of scientific domains: a longitudinal analysis

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Place: ERIC Lab (University of Lyon)

Duration: 6 months

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Subject:

The Web makes the results and discoveries obtained through the scientific progress much more

available nowadays than in earlier decades. In particular, scientific articles are used by worldwide

teams not only for pursuing their own interests, but also for starting new collaborations, creating

special journal issues, and organizing international conferences. These events seldom occur randomly:

they are often the result of preliminary works and transversal collaborations.

Researchers of the ERIC

Lab are currently working on the longitudinal analysis of bibliographic data, with a particular interest

in the diagnostics and prediction of such events.

In this context, the student's work will focus on the comparison of existing techniques for analyzing

the evolution of the scientific literature. Different approaches can be tested and the student should

make a full state of the art. This includes, on the one hand, the previous works dealing with biblio-

graphic data [5, 7, 11]. On the other hand, she/he could see the topic models developed more especially

for text mining [2, 4, 10]. These models are mainly focused on the extraction of the main tendencies

but could be extended to deal with events [1, 8]. Several packages are freely available nowadays for

testing these probabilistic models (for instance, see Mallet <http://mallet.cs.umass.edu>).

In order to validate the chosen approaches, the student will have access to various bibliographic

databases, such as DBLP (<http://www.informatik.uni-trier.de/~ley/db>) or Pascal ([http://](http://www.ovid.com/site/catalog/DataBase/214.jsp)

www.ovid.com/site/catalog/DataBase/214.jsp). The comparison will be based on purely predic-

tive quantitative measures, such as perplexity, but also on human judgment [3]. Recent work on topic extraction evaluation has been done in the lab [6, 9] ; it can be used as a start by the student.

The second stage of this internship consists in focusing on one interesting event: emergence of a new topic, publication of an original paper, creation of a new community, etc. To begin with, we propose to follow a purely descriptive approach in order to build an explanation of the occurrence of this particular event. The last stage will draw future lines of research for developing new machine learning models dealing with scientific events. These (future) models must be able to handle the different actors who populate a research domain: articles, authors, journals, conferences etc.

References

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Merci,

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