

## Identify learner profiles using trace analysis to develop support strategies for the *écri+* project<sup>1</sup>

**Mots-clés :** Tracking data analysis, Data indicators, Data Visualization, Machine Learning, Software engineering (Analysis & modelisation, development, tests), Learning process and mechanism

**Modalités de recrutement :** Based on application and interview. Before June 30, 2024, please send your C.V., a cover letter and one or two of your scientific article to [claudine.piau-toffolon@univ-lemans.fr](mailto:claudine.piau-toffolon@univ-lemans.fr)

**Contract:** 12 months Postdoctoral research contract (CDD) in computer science, beginning in september/october 2024 to LIUM (Le Mans), minimum 2 500 euros net per months.

**Profil required :** Computer Science PHD with experience in data sciences, data analytics, machine learning and/or Technology Enhanced Learning.

**Application ref :** <https://www.univ-lemans.fr/fr/universite/s-engager-a-nos-cotes/nous-recrutons/contrats-post-doctorat.html>

### **Context :**

The aim of the Plan d'Investissement d'Avenir *écri+* (<https://ecriplus.fr/>) is to develop assessment, training, and certification systems dedicated to enhancing French written expression and comprehension. This project, coordinated by UOH, involves several partner universities (such as Université de Nanterre, Université de Nice, Université de Paris 1, Université du Mans, etc.) and IT institutions (IRI, PIX, etc.). Le Mans University is responsible for conducting the impact study.

### **Missions :**

Determining the profile of an individual or a group is a challenge. The first task is to establish a body of work with a view to exploring learner profiles. This involves exploiting data extracted from the *écri+*test/éval platform. Next, a data analysis approach must be implemented, with the aim of identifying profile indicators, and calculating and visualizing these indicators. Finally, a database of identified learner profiles and indicators needs to be designed. The aim is to make it accessible and usable by pilot teachers/schools and the *écri+* project management team.

*Action 1:* Establish a working corpus for exploring learner profiles by leveraging data from the metabase to extract write+test data. If necessary, supplement these data with available academic data.

*Action 2:* Identify profile indicators, establish their calculation methods, and their visualizations. Make use of trace analysis from Action 1 to delineate various profiles in

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<sup>1</sup> <https://www.enseignementsup-recherche.gouv.fr/fr/le-projet-ncu-ecri-93576>

collaboration with pilot teachers. Employ data analysis techniques to compute the identified indicators. Present a comprehensive list of identifiable profiles alongside associated indicators and visualization methods.

*Action 3:* Propose a user interface to access the results of data analysis, including learner profiles and indicators. Develop a database containing indicators and learner profiles accessible to pilot teachers/schools and the écrit+ project management team. This database should facilitate the implementation of project-wide support strategies for all partners.

## **Bibliography**

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- Cleuziou, G., & Flouvat, F. (2021, June). Learning student program embeddings using abstract execution traces. In *14th International Conference on Educational Data Mining* (pp. 252-262).
- Li, Xiaoyong & Zhang, Yong & Cheng, Huimin & Zhou, Feifei & Yin, BaoCai. (2021). *An Unsupervised Ensemble Clustering Approach for the Analysis of Student Behavioral Patterns*. IEEE Access. PP. 1-1. 10.1109/ACCESS.2021.3049157.