

# Ph.D. in Data Science and Financial Econometrics

## Data Science and Machine Learning for Insurance Fraud Detection

### CALL FOR APPLICATIONS

**Supervisors.** Denisa BANULESCU-RADU (LEO, University of Orléans)

**Research project.** The research project aims to develop new techniques for the prevention and detection of insurance fraud. Despite its age, fraud continues to have enormous financial, economic and social impacts. Nowadays, fraud records impressive amounts and it is still showing an increasing trend due to the expansion of modern technologies. The main motivations for the fraud detection process are related to (i) the challenge of modelling the fraudsters' strategic behavior; (ii) the need of new effective detection methods given the complexity of the fraud phenomenon; (iii) the existence of new databases with huge potential to deploy analytics and uncover fraud mechanisms. The main objective of the thesis is therefore to propose new technical models with good predictive performances for the detection of insurance fraud, while keeping their interpretability. The PhD student will work on proprietary data provided by the national insurance company Thélem assurances.

**Integration.** The Ph.D. candidate will integrate the research teams of LEO (Laboratoire d'Économie d'Orléans, University of Orléans) and will join the University Doctoral Program of University of Orléans. A collaboration with an international university could also be envisaged.

**Profile.** Applicants must hold, or complete during the current academic year, a master's degree in Economics, Econometrics, Data Science, Finance or equivalent. Candidates should demonstrate a strong background in econometrics, data science and machine learning, and an interest in programming. Proficiency in English is necessary. Presentation at scientific conferences and participation in the publication of results in leading international journals are expected. As an equal opportunity employer, the University actively encourages applications from women. Preference will be given to disabled applicants with equal qualifications.

**Conditions.** We offer a full-time PhD scholarship of 1,400 EUR per month (after tax and social contributions) for 3 years starting from October 1, 2021. Optional remunerated course load.

**How to apply.** The applications are welcomed no later than **July 20, 2021**, by email to [denisa.banulescu-radu@univ-orleans.fr](mailto:denisa.banulescu-radu@univ-orleans.fr)

#### Compulsory documents:

- a) Copy of a valid identity document (Passport for Non-EU citizens)
- b) CV including complete information on education, scientific and professional experience
- c) List of courses and transcripts of exams (Master level)

#### Optional documents:

- a) Copy of the master's thesis if available
- b) Reference letters from professors or researchers who have a good knowledge of the applicant's performance during his/her university studies