

# Positions in causality

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PhD positions and/or postdoc positions are open to work on causality. The idea is to improve ML models using causality, focusing on generalization [1] and interpretability [2]. Potential research directions include 1/ the learning of a dictionary to take into account the causal information through interpretable meta-variables [4], 2/ feature selection through Markov blanket [3] and the link with statistical feature selection, as the Lasso, 3/ improving the prediction using the causal graph.

**Starting date:** October 1st, 2023 (flexible)

**Application deadline:** From now until the position is filled

**Salary:** 2000€ gross/month (social security included)

**Mission:** research oriented (teaching possible but not mandatory)

**Place of work (no remote):** Laboratoire d'Informatique de Grenoble, CNRS, Grenoble, France

**Keywords:** causal machine learning, interpretability, feature selection, statistica learning

**Skills:** Master degree in Machine Learning, Statistics, Data Science. Mastering Python or R programming. Very good communication skills in English, French not needed.

**Scientific Environment** The thesis will be conducted within the Aptikal team of the LIG laboratory. The means to carry out the PhD will be provided both in terms of missions in France and abroad and in terms of equipment.

**Instructions for applying:** Applications must contain: CV + letter/message of motivation + master notes + be ready to provide letter(s) of recommendation; and be addressed to Emilie Devijver (emilie.devijver@univ-grenoble-alpes.fr).

## References

- [1] Sara Beery, Grant Van Horn, and Pietro Perona. Recognition in terra incognita. In Vittorio Ferrari, Martial Hebert, Cristian Sminchisescu, and Yair Weiss, editors, *Computer Vision – ECCV 2018*, pages 472–489, Cham, 2018. Springer International Publishing.
- [2] Christoph Molnar. *Interpretable Machine Learning*. 2 edition, 2022.
- [3] Jean-Philippe Pellet and André Elisseeff. Using markov blankets for causal structure learning. *J. Mach. Learn. Res.*, 9:1295–1342, jun 2008.
- [4] Yixin Wang and Michael I. Jordan. Desiderata for representation learning: A causal perspective, 2021.