Post-Doc position in Mathematical Statistics

in the research ANR project “MCLAREN” (ANR-20-CE23-0011)

Laboratoire J.A. Dieudonné, UMR CNRS 7351, Université Côte d’Azur, Nice.

This Post-doc scholarship is devoted to investigate an open statistical problems in the multivariate risk measures and extreme value theory with applications in functional statistics.

**Duration**

18 months, position beginning as soon as possible after February 1, 2021.
Gross revenue monthly 2981,72 €, net before tax 2396,40 €

**Require qualification**

PhD in Mathematical Statistics

**Required skills**

Several skills are required as

- A solid background in multivariate probability and multivariate statistic theory,
- Possible knowledge in extreme value theory,
- A good knowledge in programming languages (as R, C++ or Matlab).

**Goals**

During this post-doc position, we aim to study some multivariate extensions of risk measure as for instance multivariate Expectiles when some covariate information is available. Preliminary studies in this sense can be found in [Maume-Deschamps et al. (2017, 2018), Beck et al. (2020)].

We aim to adapt the univariate well known conditional expectile/quantile model (see, e.g. [Daouia et al. (2013), Usseglio-Carleve (2018), Girard et al. (2019)]) to our estimation problem for new conditional multidimensional risk measure in the heavy-tailed framework with functional covariate information. In particular we will use extrapolation technique when the risk level $\alpha \to 1$ together with some non-parametric estimation procedures of the conditional tail copula (see, e.g., [Gardes and Girard (2015)])

The interested reader is also referred for instance to [Gardes et al. (2019), Gardes and Stupfler (2019)] where functional non-parametric estimators for conditional univariate extreme quantiles are proposed.

The main objective of this approach for extreme functional multivariate risk measures would be to balance the trade-off between the high sensitivity to dimension of full nonparametric models and the relative lack of flexibility of the completely parametric models (see, e.g., [Goia and Vieu (2016)]). Since the considered covariate belongs to a not necessarily finite-dimensional Polish space endowed with a semi-metric, this work will open interesting perspectives in functional statistics field.

The selected student will be co-supervised by Thomas Laloe and Elena Di Bernardino, with an office at Laboratoire J.A. Dieudonné, Université Côte d’Azur in Nice. This scholarship of 18 months is financed by the ANR projet “MCLAREN” (ANR-20-CE23-0011).

**Contacts for candidature**

Contacts to apply via mail:

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Needed documents:
- PhD or equivalent diploma
- Cover letter
- Detailed curriculum vitae with research summary
- Copy(s) of the diploma(s)
- Thesis defense report
- The name and contact of a person for recommendation

References


