CYPRUS ACADEMY OF SCIENCES, LETTERS, AND ARTS

POST-DOCTORAL RESEARCH POSITION

Machine Learning for Political Risk Measurement

Cyprus Academy of Sciences, Letters, and Arts

Apply here https://forms.cloud.microsoft/e/NWntxsDHAg

The Project

Political risk—from elections and trade wars to regime changes—shapes the fortunes of nations, markets, and businesses, yet its definition and quantification are mired in confusion. The **Political Risk Laboratory** is a new research initiative of the Cyprus Academy, funded by the Cyprus Research and Innovation Foundation, that uses machine learning to cut through this confusion: extracting latent common features from divergent ratings, identifying regime shifts, and building the evidence base for more reliable political risk measures. The successful candidate will work at the core of this agenda, co-author publications, and potentially be invited to join a major multi-year research grant. The initiative is directed by Professor Stavros A. Zenios, a Member of Academia Europaea at Durham University and Bruegel in Brussels.

What You Will Do

- Collect and curate political risk rating data and conduct exploratory statistical analysis to establish stylised facts of ratings divergence.
- Extract latent common features from divergent ratings using hierarchical IRT, autoencoders, or factor-analytic methods (including Target-PCA), comparing linear and nonlinear approaches for dimensionality reduction and noise removal.
- Identify regime shifts in political risk using hidden Markov models, statistical jump models, and feature engineering informed by domain knowledge and linking detected regime shifts to time-varying risk premia and portfolio allocation.
- Validate findings through out-of-sample prediction of political risk realisations and backtesting of regime-dependent divergence measures and financial portfolio metrics.
- Explore the use of mixture variational autoencoders for scenario generation.
- Co-author working papers and present at leading finance or ML conferences and policy seminars.

Required Qualifications

- PhD (completed or near completion) in machine learning, statistics or econometrics, computational finance, operations research, or a closely related quantitative discipline.
- Demonstrated expertise in (preferably two of) the following: representation learning/autoencoders, regime-switching models, time-series analysis, IRT or Target-PCA, or probabilistic generative models.
- Strong programming skills with a high-level programming language for machine learning and data science and familiarity with ML frameworks.
- Ability to work independently, communicate clearly, and collaborate across disciplines.

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Desirable

- Experience with high-performance computing.
- Publication record in peer-reviewed journals or top ML conferences.
- Familiarity with financial economics, econometrics, Bayesian hierarchical models or latent variable models.

Terms of Appointment

- Duration: 18 months, full-time, with the possibility of continuation under a multiyear grant.
- Remuneration: Up to €3,000 per month (gross), commensurate with experience, plus conference travel.
- Location: Choice based on nationality and visa status: Cyprus Academy of Sciences, Letters, and Arts or Durham University.
- Access to state-of-the-art computational resources, including HPC clusters and GPUs.
- Expected start date: Summer 2026.

How to Apply

Please submit the following documents as **a single PDF** through the registration link https://forms.cloud.microsoft/e/NWntxsDHAg:

- A 1-page cover letter describing your research interests and suitability for the position.
- Curriculum vitae, including a list of publications.
- A 2-page research statement explaining what you propose to do within the project scope and why your expertise is well-suited for the project; start with “You should hire me to…”.
- Names and contact details of two academic referees.

Review of applications will begin on April 1st and continue until the position is filled.

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