Edouard Pineau

pineau.edouard@gmail.com (+33) 6.71.71.16.42 linkedin.com/in/edouardpineau

PROFESSIONAL EXPERIENCES

Research engineer - Head of R&D

EthiFinance *2021 - now, France*

Scientific contributions on:
- Credit risk modeling
- Climate and nature stress testing and value at risk models
- Value chain effects in economic and financial risk modeling
- Science-based temperature alignment methodology
- Assessment of geolocalized climate and nature-related risks
- Outlier detection and imputation of heterogeneous databases

Management of the R&D team with three main objectives:
- Create innovative models and tools to help financial institutions integrate environmental factors into their risk models
- Develop efficient data pipelines to map a portfolio with databases and models on the fly for internal usage
- Present research results in academic journals and conferences

Consultant

Natixis *2022 - 2024, France*

- Implementation of several tools to introduce climate forward-looking risks (transition and physical, bottom-up and top-down) into the bank's stress testing framework
- Support for teams in validating models and producing figures

MAIF *2024, France*

- Creation and implementation of climate value at risk tools for their multi-asset portfolio (equities, bonds, real estate)
- Restitution of the results
- Training teams in climate-related topics

Action Logement Services *2024, France*

- Creation and implementation of climate risk models for their real estate portfolio, for transition and physical risks (bottom-up and top-down)
- Restitution of the results and training of the teams

Research scientist - PhD candidate

Safran *2018 - 2020, France*

Contributions to representation learning of time series and graphs:
- Unsupervised representation learning of multivariate time series using neural networks, with application to ageing detection in mechanical systems, causality detection, survival analysis, blind source separation
- Representation learning and classification of unlabeled graphs

Publication and presentation to conferences of the main results

Internships

Safran *2017, France*

Rivage Investment *2016, France*

Allianz Global Investors *2015, France*

Rotschild & Co. *2014-2015, France*

SUMMARY

I am currently a research engineer and head of the R&D team at EthiFinance. I focus on solving financial and non-financial risk modeling problems. I develop quantitative solutions for financial institutions to assess the effect of systemic pressures, such as climate change and transition plans, natural asset degradation or any macro-financial shock, on their credit or investment portfolios. I model all the transmission channels from the scenario to the financial measures with the greatest possible economic plausibility, based on the state of the art in economic modeling, as applied within financial and research institutions. I hold a PhD in machine learning applied to time series and graphical representation, defended in 2020.

SKILLS

Science	Financial risks modeling Climate finance modeling Data science Machine learning
Banking	Stress test methodologies Regulatory formulas Model validation
Back End	Python (advanced) R (limited)
Languages	French (native) English (professional)
Writing	Advanced capacities

EDUCATION

Telecom Paris *2018-2020, France*

PhD - Applied math. and computer science

3-year PhD thesis, supervised by Thomas Bonald and defended in December 2020. Several contributions to representation learning of time series and graphs.

ENS Saclay / Dauphine *2017-2018, France*

M.Sc. - Statistical learning

Co-diploma, with the machine learning courses taken at ENS Saclay (Master MVA) and a specialization in Bayesian statistics at Paris-Dauphine. Final internship as research data scientist in aeronautics industry.

Univ. Paris Dauphine *2010-2017, France*

B.Sc. / M.Sc. - Applied math. and economics

Mathematics, with applications in economics and finance. Three internships as a quantitative analyst in asset management companies.

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SCIENTIFIC PUBLICATIONS

Pineau, E., Riano Sanchez, J. A., Bres, J., Schrapffer, A. (2024). Nature stress testing and value at risk.

Pineau, E., Zuñiga, E. (2024). Sectoral credit sensitivity to carbon price with value chain effects.

Pineau, E., Razakarivony, S., Bonald, T. (2023). U.S. Patent Application No. 18/004,258.

Pineau, E. (2023). Three PD-LGD models for a stress test.

Pineau, E., Razakarivony, S., Gonzalez, M., Schrapffer, A. (2023). Universal hidden monotonic trend estimation with contrastive learning.

Pineau, E., Le, P., Estran, R. (2022). Importance of ESG factors in sovereign credit ratings.

Pineau, E., Gonzalez, M., Estran, R., Guichar, J. P. (2022). Optimal Hedging of French Savings Products.

Pineau, E., Estran, R., Delzant, L. (2022). Sensibilité du risque de crédit au prix du carbone.

Gonzalez, M., **Pineau**, E. (2021). A multi-observation HMM with applications to credit quality of a portfolio.

Pineau, E., Razakarivony, S., Bonald, T. (2020). Unsupervised ageing detection of mechanical systems on a causality graph.

Pineau, E., Razakarivony, S., Bonald, T. (2020). Time series source separation with slow flows.

Pineau, E., Razakarivony, S., Bonald, T. (2020). Seq2var: multivariate time series representation with relational neural networks and linear autoregressive model.

Pineau, E., de Lara, N. (2019). Variational recurrent neural networks for graph classification.

de Lara, N., **Pineau**, E. (2018). A simple baseline algorithm for graph classification.

Pineau, E., Lelarge, M. (2018). InfoCatVAE: representation learning with categorical variational autoencoders.

INTERVENTIONS IN CONGRESSES

Green Finance research advances 2024, organized by *Institut Louis Bachlier* and *Banque de France*

Green Summit 2024, organized by *Natixis*

Green Finance research advances 2023, organized by *Institut Louis Bachlier* and *Banque de France*

Computing Conference 2023, organized by *Science and Information (SAI) Conferences*

International Conference on Machine Learning and Applications (2020), organized by *Association for Machine Learning and Applications*

Invertible Neural Networks, Normalizing Flows, and Explicit Likelihood Models Workshop (2020) organized by *International Conference on Machine Learning*

Advanced Analytics and Learning on Temporal Data 2019, organized by *European Conference on Machine Learning*

Representation Learning on Graphs and Manifolds Workshop 2019, organized by *International Conference on Representation Learning (ICLR)*

Relational Representation Learning Workshop 2018, organized by *Neural Information Processing Systems (NeurIPS)*