Yadang Alexis Rouzoumka

Quantitative Researcher / Quant ML Candidate (PhD)
Statistical Learning, Probabilistic Modeling, Signal Intelligence

Email: rouzoumkaalexis@yahoo.fr   ·   Phone: +33 7 51 25 25 37   ·   Paris, France

Website: alexis-rouzoumka.pages.dev

GitHub   ·   LinkedIn   ·   Google Scholar

Summary

PhD candidate at CentraleSupélec / Université Paris-Saclay, conducting research within ONERA / SONDRA, an international France–Singapore radar research alliance. Background in statistical learning, probabilistic modeling, uncertainty quantification, robust detection under distribution shift, and heavy-noise settings. I build reproducible research pipelines in Python, design rigorous evaluation protocols, and translate theory into robust code. Currently seeking Quant Research / Quantitative ML roles where strong statistics, fast experimentation, and signal-based modeling matter.

Strengths

- **Statistical modeling:** hypothesis testing, estimation, Bayesian inference, uncertainty quantification, robust modeling under heavy-tailed noise and distribution shift.

- **Time series & signals:** ARIMA/SARIMA, stochastic processes, state-space intuition, feature design for structured signals, detection and anomaly scoring.

- **Machine learning:** supervised/unsupervised learning, representation learning, variational autoencoders, diffusion models, model evaluation, bootstrap confidence intervals, leakage-aware validation.

- **Research engineering:** reproducible experimentation, packaging, CI/CD, testing, documentation, Docker, Git, Linux, modular Python pipelines.

- **Quant-oriented interests:** market microstructure, transaction-cost-aware experimentation, order-book simulation, execution baselines, and systematic signal research.

Education

PhD in Machine Learning and Deep Learning Applied to Robust Radar Target Detection *CentraleSupélec / Université Paris-Saclay*   2023–2026 (expected)
In collaboration with ONERA / SONDRA. Research topics include out-of-distribution detection, generative modeling (VAEs, diffusion models), complex-valued learning, and theory-backed detection under challenging noise and clutter. Selected coursework and background: stochastic processes, statistical learning, time-series analysis, optimization, inference.

Master's Degree in Applied Mathematics and Statistics *Université Clermont Auvergne*   2021–2023

Experience

PhD Researcher *ONERA / SONDRA — CentraleSupélec / Université Paris-Saclay*   2023–Present
Palaiseau / Gif-sur-Yvette, France

- Develop robust detection methods for complex and noisy signals using variational autoencoders, diffusion-based methods, and statistical detection tools.

- Design and benchmark evaluation pipelines for out-of-distribution detection under compound clutter and thermal noise.

- Build reproducible experimental workflows in Python / PyTorch with structured data processing, ablation studies, and statistical evaluation.

R&D / Scientific Software Engineer *PHIMECA*   2022–2023
Cournon-d'Auvergne, France

- Worked on uncertainty quantification, reliability studies, Bayesian correction, and scientific Python tooling.

- Developed Python modules and reusable workflows for scientific computing and measurement-error correction.

- Contributed to software engineering practices: documentation with Sphinx, CI/CD with GitLab CI and Docker, testing, packaging, and executable delivery.

Teaching Assistant *IUT Computer Science — Université Paris-Saclay*   2024–Present
France

- Teach mathematics for signal processing, Java software development, and SQL/database fundamentals.
- Support students on implementation, debugging, and structured problem solving.

Quant Projects & Independent Research

LOB Simulator / Market Microstructure Project   Ongoing

- Building an order-book simulation project to study execution policies, market microstructure effects, and transaction-cost-aware experimentation.
- Comparing execution baselines such as TWAP/VWAP and exploring data-driven policies in a controlled simulation framework.
- Developing reusable research code for feature extraction, simulator evaluation, and systematic experimentation.

Selected Publications

- **GEPC: Group-Equivariant Posterior Consistency for Out-of-Distribution Detection in Diffusion Models**, submitted to ICML 2026, arXiv preprint, 2026.
- **Latent-Space Metrics for Complex-Valued VAE Out-of-Distribution Detection under Radar Clutter**, IEEE ICASSP 2026.
- **Out-of-Distribution Radar Detection in Compound Clutter and Thermal Noise through Variational Autoencoders**, IEEE ICASSP 2025.
- Additional publications in EUSIPCO, GRETSI, ICASSP, and IEEE Transactions on Signal Processing. Full list available on personal website / Google Scholar.

Skills

Programming	Python (NumPy, Pandas, SciPy, PyTorch, Tensorflow), R, SQL, Bash, Git, Docker
Statistics / ML	Time series, stochastic processes, Bayesian inference, uncertainty quantification, hypothesis testing, generative models
Research Engineering	Reproducible experiments, validation design, bootstrap CIs, CI/CD, testing, packaging, Linux workflows
Quant / Finance	Market microstructure, execution modeling, backtesting principles, signal research (project-based)
Languages	French (native/fluent), English (professional), Spanish (basic)

References

Available upon request.