

GAEL REINAUDI

352 West 117th street #2F New York, NY 10026, USA

+1 (646) 422 9346

gael.reinaudi@gmail.com

Professional Summary

- Experienced Quantitative Developer and AI/ML innovator with a robust track record in HFT and advanced financial data modeling. Demonstrated dual expertise in cutting-edge technology and finance, from designing automated trading systems for leading hedge funds to single-handedly building a successful AI startup. Adept at transforming complex data into intuitive visualizations and actionable insights.
- Passionate technologist keeping himself at the cutting edge, Expert in modern Python and usage of LLM/AI technologies to streamline workflows, enhance automation, and multiply development speed.

Education

- 2004-2008** • **Ph.D. in experimental quantum physics, *École Normale supérieure de Paris***
Atom Optics Group led by Claude Cohen-Tannoudji (Nobel Laureate)
- 2001-2005** • ***École Normale supérieure de Paris*** (Admission through competitive exams)

Skills

AI, Machine Learning & LLM:

- Expertise in usage/application of Large Language Models (LLM), LLMOps, AI Agents workflows, Cursor.
- Extensive and original experience with deep learning architectures applied to financial data.
- Skilled in implementing modern AI frameworks: LangGraph, LlamaIndex, Agentic systems, local LLMs, etc.
- Expertise in MLOps, AI-driven workflows, and Generative AI tools for coding, testing, documenting, etc.
- Experienced with adapting new paradigms and cutting-edge AI research to solve complex problems in new ways.

Quantitative Finance:

- Strong logical skills, innate curiosity, quick at grasping complex problems, and proposing innovations.
- Low-latency trading, order book market data, code optimization, backtesting, Series 57 current.
- Experienced with research-grade evolutionary optimizations, AI-powered trading strategies.
- Skilled at adapting recent research-grade papers and codebases to address new challenges.

Programming:

- Python: Highly proficient, Top 0.6% Python Code Expert (Legend League in coding competitions).
- Advanced Python: asyncio, generators, type safety, Pydantic, testing, FastAPI, Polars,...
- C++: Experienced with large codebases in both HFT firm environment and personal projects. Familiar with Meta-programming, branch prediction, cache warming, static polymorphism (CRTP),...
- Tools: Proficient user of TensorFlow, PyTorch, Pandas, Polars, Hasura, Django, GraphQL, Linux, Docker, Kubernetes, GCP, CI/CD, Git, Jupyter, Elastic Search,...

Personal:

- Licensed Pilot with Instrument Rating: Advanced aviation qualification demonstrating technical mastery, methodical decision-making, and commitment to excellence.
- Rapid problem assimilation: Ask sharp questions early to quickly "see the whole picture."

Professional Experience

Technology Startup, Machine Learning, AI/LLM Systems:

- 2024-2025** • **Latour Trading LLC (Tower Research's flagship group, New York):** Quantitative Developer
- ◊ Building and modernizing the datascience pipelines for market data analysis using Python and C++.
 - ◊ Using Generative AI to improve internal processes, testing, debugging, documenting.
- 2021-2024** • **Sinecure.AI (New York):** CTO and Co-Founder <https://sinecure.ai>
- Founded and built from scratch a cutting-edge AI platform (valuation \$20M+).
- ◊ Single-handedly coded the scalable, plugin-driven Python framework that provides system genericity alongside flexibility for client-specific needs.
 - ◊ Architected the databases schema using Django and Hasura to enable advanced GraphQL access and integration with strongly typed Pydantic models. tinyurl.com/36dcwevf
 - ◊ Built AI Agents and LLM-powered systems (Langchain, LlamaIndex, LangServe, MemGPT) for semantic search breaking down structured insights into a deeply connected graph for a client-specific search engine.
 - ◊ Built all mechanisms for unit-testing, integration testing and automatic deployment of dozens of endpoints in GCP, Kubernetes, CloudRun. Single-click deployment of all services.
 - ◊ Implemented Large Language Models (OpenAI GPT-4, Claude, Llama) and LLMOps for advanced, plugin-driven user interaction and data extraction, completion, analysis, and scoring.
 - ◊ Recruited, trained, and managed a growing team of developers to maintain and extend the platform. Ran the technology meetings for clients, investors and the board of directors.

Professional Experience (continued)

Algorithmic Trading / Machine Learning / Data Science:

- 2018-2021**
- **JPMorgan (New York):** Data Scientist Manager, VP
 - ◊ Established the data science platform and the AI/ML prediction ecosystem for the Roar group.
 - ◊ Built powerful time series predictions, running and training online, on live data, using Temporal Convolutional Networks with unlimited lookback timeframe. tinyurl.com/yskxkrvx
 - ◊ Pioneered Deep Neural Networks (DNN) and Large Language Models for financial data processing.
 - ◊ Applied MLOps practices for robust deployment of AI models in production environments.
- 2015-2018**
- **Ronin Capital (New York):** Lead Data Scientist, Lead Strategy Developer
 - Adapted state-of-the-art AI research tools into production trading strategies (equity/ETF).
 - ◊ Built an Order Management System, and implemented various AI-powered trading strategies.
 - ◊ Enhanced trading strategies by implementing evolutionary optimization techniques to fine-tune a complex parameter set.
 - ◊ Adapted cutting-edge deep-learning techniques (CNN, RNN) to identify/optimize trading signals.
 - ◊ Developed an innovative technique to encode Level 2 market data into meaningful images suitable for analysis by Spatio-Temporal Convolutional Networks. tinyurl.com/4c3fbzev
- 2013-2015**
- **Global Trading Systems (New York):** Lead Trading Model Developer
 - ◊ Coded the full trading logic, conducted backtesting, and analysis (fixed income).
 - ◊ Architected a fully automated deployment system for strategies.
 - ◊ Low-latency optimizations for market-making strategy, including meta-programming for better branch prediction and cache warming.
 - ◊ Implemented early machine learning techniques to optimize trading parameters.

Framework for Visually Interactive Research, Trading, and Optimization:

- 2007-2013**
- Project *single-handedly* designed and developed. tinyurl.com/4xtnmmuc
 - Initially used by Columbia University for experiments, adapted for production trading at Ronin Capital.
 - ◊ Developed in C++, object-oriented programming, with highly interactive GUI, and multi-threading.
 - ◊ Supported over 30+ plugins, developed by users through an exposed API.
 - ◊ Featured interfaces for image processing, data fitting, scripting, genetic optimizations, and trading.
 - ◊ Integrated computer vision and early AI techniques for data analysis.

Hands-on Experimental Research:

- 2008-2013**
- **Columbia University (New York):** Postdoc and Associate Research Scientist in Atomic Physics
 - Built from scratch an entire quantum physics experiment with advanced data analysis techniques.
- 2004-2008**
- **École Normale Supérieure de Paris:** Ph.D. in the Laboratoire Kastler-Brossel
 - Built highly original apparatus for *ultra-cold atoms* quantum physics.

Teaching:

- 2006-2008**
- Scientific expert demonstrator at the *Palais de la Découverte* (scientific museum) in Paris.
- 2004-2005**
- Examiner in preparatory classes for the Grandes Écoles.

Additional Information

- Interests**
- Passionate airplane owner and pilot with Instrument Rating
 - Avid rock climber (5.12d),
 - tinkerer and maker with a broad scope of projects and techniques.
 - Builder and participant in combat robotics competitions (NHRL).

Publications

- 2018** • P. Gentine, M. Pritchard, S. Rasp, G. Reinaudi & G. Yacalis
Could machine learning break the convection parameterization deadlock?
Geophysical Research Letters, **45**, 5742
- 2012** • G. Reinaudi, C. B. Osborn, M. McDonald, S. Kotochigova & T. Zelevinsky
Optical Production of Stable Ultracold Sr88 Molecules
Phys. Rev. Lett., **109**, 115303 (2012)
- G. L. Gattobigio, A. Couvert, G. Reinaudi, B. Georgeot & D. Guiry-Odelin
Optically guided beam splitter for propagating matter waves
Phys. Rev. Lett., **109**, 030403 (2012)
Selected for the American Physical Society "**Spotlighting exceptional research**"
- 2011** • G. Reinaudi, C. B. Osborn, K. Bega, & T. Zelevinsky
Dynamically configurable and optimizable Zeeman slower using permanent magnets and servomotors
J. Opt. Soc. Am. B, 160242 (2011)
- 2010** • G. Reinaudi, book publication of the Ph.D. Thesis
Manipulation d'atomes ultra-froids: vers un laser à 1/2 atomes continu (Manipulation of ultra cold atoms: towards a continuous atom laser)
Editions Universitaires Europeennes, ISBN 978-613-1-50940-7 (2010)
- 2008** • A. Couvert, M. Jeppesen, T. Kawalec, 1/2 G. Reinaudi, R. Mathevet, & D. Guiry-Odelin
Quasi-monomode guided atom laser
Eur. Phys. News **39-Highlights**, 6-14 (2008)
- A. Couvert, M. Jeppesen, T. Kawalec, G. Reinaudi, R. Mathevet, & D. Guiry-Odelin
A quasi-monomode guided atom-laser from an all-optical Bose-Einstein condensate
Europhys. Lett. **83**, 50001 (2008)
Selected for the "**Highlights**" section in Eur. Phys. News **39**
- G. Reinaudi & D. Guiry-Odelin
A Maxwell's demon in the generation of an intense and slow guided beam
Phys. Rev. A **78**, 015401 (2008)
- A. Couvert, T. Kawalec, G. Reinaudi & D. Guiry-Odelin
Optimal transport of ultracold atoms in the non-adiabatic regime
Europhys. Lett. **83**, 13001 (2008)
- 2007** • G. Reinaudi, T. Lahaye, Z. Wang & D. Guiry-Odelin
Strong saturation absorption imaging of dense clouds of ultracold atoms
Opt. Lett. **32**, 3143 (2007)
- G. Reinaudi, A. Sinatra, A. Dantan & M. Pinard
Squeezing and entangling nuclear spins in ³He
J. Mod. Opt. **54**, 675-695 (2007)
- G. Reinaudi, Z. Wang, A. Couvert, T. Lahaye & D. Guiry-Odelin
A mirror to generate a beam
Eur. Phys. News **38-Highlights**, 3-17 (2007)
- 2006** • G. Reinaudi & D. Guiry-Odelin
The atom lasers
DGA Edition, Bulletin bibliographique Prospective Oriented Group on Lasers and Optonics (POLOQ)
n° 2006-1, p. 165-172
- G. Reinaudi, Z. Wang, A. Couvert, T. Lahaye & D. Guiry-Odelin
A moving magnetic mirror to slow down a bunch of atoms
Eur. Phys. J. D **40**, 405-410 (2006)
Selected for the "**Highlights**" section in Eur. Phys. News **38**
- T. Lahaye, G. Reinaudi, Z. Wang, A. Couvert & D. Guiry-Odelin
Transport of Atom Packets in a Train of Ioffe-Pritchard Traps
Phys. Rev. A **74**, 033622 (2006)
- G. Reinaudi, T. Lahaye, A. Couvert, Z. Wang & D. Guiry-Odelin
Evaporation of an atomic beam on a material surface
Phys. Rev. A **73**, 035402 (2006)
- 2005** • T. Lahaye, Z. Wang, G. Reinaudi, S.P. Rath, J. Dalibard & D. Guiry-Odelin
Evaporative cooling of a guided rubidium atomic beam
Phys. Rev. A **72**, 033411 (2005)
- T. Aichele, V. Zwiller, M. Scholz, G. Reinaudi, J. Persson & O. Benson
Multiplexed quantum cryptography with single InP quantum dots
Proceedings of SPIE **5722**, 30-44 (2005)