Stephan Thomas, PhD
Quant Dev / Trading, Research & Execution / TradFi-DeFi

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Thank you for considering my application. Below is a summary of my relevant experience and expertise:

- Background in Microstructure Analysis (theory and practice):
  - Focus on LOB dynamics, market impact models, and TCA.
- Key Projects:
  - Collaborated with Igor Halperin's team and Professor Petter Kolm.
  - Designed an Optimal Order Execution system using RL and MLOps design patterns, aimed at building a trading-as-a-service platform for institutional clients (details available on request).
  - PO-ed and GTM-ed a ModelOps platform, cloud and open-source based for MLC operationalization
- Startup Experience:
  - Founded an algo trading tech and research firm.
  - Built an aggregated order book for Europe's main MTFs, simulating up to 1 million orders/second.
  - Analyzed MiFID best execution principles in high-frequency markets using C++ and Java for over 50 different order types. (repo provides a glimpse).
- Agent-Based Systems for HFT:
  - Developed systems in Java to study HFT systemic impacts for regulation purposes.
  - You can check this executive deck presenting the PoC-stage project.
- Current Work:
  - Modeling the quantum-chaotic nature of microstructure to refine limit order patterns and maximize MM rebates (work in progress).

I am eager to discuss how my skills and experience align with the needs of your team.

EDUCATION & CERTIFICATION

2020 Certification in Reinforcement Learning, NYU Tandon School of Engineering
2018 Certification in Deep Learning, Deeplearning.ai (Pr. Andrew Ng)
2012 PhD in Finance « Risk measures: theoretical foundations and new perspectives, with an application to credit derivatives », with advisor Pr.Thierry Chauveau, University of Paris 1 Panthéon-Sorbonne
2005 MSc Research «Banking and Finance », University of Paris 1 Panthéon-Sorbonne

SKILLS

- Product management
- R&D, Innovation, design thinking
- Strategy and Communication
- Corporate Partnership management
- Multidisciplinary ownership
- Fast-paced, hyper-growth leadership
- Model Operationalization (MLOps, DevOps)
- Quantitative finance, Maths, Data science (RL++)
- Blockchain/Crypto strategy
- Code: Python, Rust, C#, Matlab, SAS
- Stack: Databricks, Azure ML, Spark, IBM Watson/CPD, Datarobot, Kubernetes, Ethereum

EXPERTISE

- DeFi Market (Liquidity, Money, Derivatives)
- ModelOps platform design
- Open-source/Cloud architecture design
- Financial risks (de)regulation
- Business development
- Managed services
- Exceptional analytical approach
- AI-ML application to financial services
- Numerical methods (MC, Variance reduction, MDP)
- Market data engineering and chain optimisation
- Credit derivatives: modelling, pricing and hedging
- Fixed income and Equity valuation

EXTRA

- Languages: English (fluent), Spanish (intermediate), Arabic (beginner)
- Sports: Krav Maga, Triathlon (Ironman 70.3 Championship - country rank 29, global rank 495), Tennis, Wakeboard, Snowboard, Climbing, Skydiving
- Arts: Photography (shooting, black room), Music (guitar player, 10y Classical Conservatory)
- Community: Volunteering in an OBNL career guidance and employment support association, board member in Montreal PRMIA Chapter, mentor in FinML

BUSINESS EXPERIENCE

Almanak Blockchain Labs – Chief Product Officer — July 2022 - May 2024

Almanak is a crypto startup that develops "Multiverse", an AI agent-based platform destined to Quant Dev users to import, build, test, deploy and monitor autonomous agents running on the blockchain (EVM mostly) to execute low to mid-frequency DeFi strategies relying on AI-ML models in a non-custodial way.
I led the Quant and Product teams for 2y, from 0 to 1, product-market fit and go-to-market.
Some of my key achievements:

- Defined the product vision and strategy
- Designed the product roadmap
- Participated and supported the **seed round - $6 million**
- Executed the roadmap through iteration, validation learning, prototypes, and alpha / beta stage
- Developed LP and arbitrage trading strategies for institutional clients
- Designed on/off chain trading execution systems
- Closed institutional clients' capital up to **$10 million AUM** on trading execution automation

StableNode – Decentralized Governance Advisory — Mar. 2022 - June 2022

StableNode is a DeFi governance advisory and node validator accompanying major DeFi projects such as 1inch, Uniswap, Balancer, Maker etc…
I was responsible for defining and designing the advisory go-to-market with DAOs.

Ernst & Young LLP – AI Risk Partner, Canada — Sept. 2020 - Feb. 2022

Financial Services Risk Management Lead for AI Risk, MRM and ModelOps with a group of 15-20 FTEs.
I was executing a **+$4-6M revenue and a $1.5M investment budget** for our product development.
I thrived in a fast-paced, hyper-growth environment, interacting with multi-disciplinary stakeholders, both internal and clients, from C-suite to engineering, through to business development and end-users.
My teams were composed of business experts, quant, data scientists, software architects and UI-UX designers and developers.
My responsibilities were:

- Lead the innovation strategy for the assetization solutions: gather and build around EY's champion assets to bring new solutions to our clients.
- Lead the risk managed services: design and implementation of MS for automated risk management of various processes related to risk valuation, monitoring, model validation.
- Lead the AI Risk partnership strategy with Techs: IBM, SAS, Microsoft and Databorot (direct owner of the partnership). Design and execution of go-to-market roadmap, execution of PoC, creation of innovative solutions leveraging partners' and EY's assets.
- Product Manager of EY's equity-funded ModelOps platform "SHAZAM". Cloud API and open-source based for model lifecycle operationalization. Defining and executing the product architecture, strategy, and roadmap.

Valital Technologies – Advisory Board Member, Montreal — 2020

Advisor for the R&D and product strategy of their AI-powered solution.

Chappuis Halder & Co. – Director of Research & Analytics, Montreal-NYC — 2018 – 2020

CH&Co. is a global management consulting shop. In charge of the development of the Global Research & Analytics (GRA) centre of expertise in North America (Montreal, New York City offices), dedicated to risk modelling, model risk and data science & analytics.

- Launched the North American GRA practice from ground up, resulted in a team of 10 people and **CAD3.7M$ regional** revenue over two years.
- Defined the service offer and produced all the internal and external content to support the business development: one-pager, teaser, quantitative papers, position papers, pitch deck
- Drove and executed large MRM & Validation mandates for our clients
- Built and proposed innovative business models to extend the service offer and reach new markets
- Led the R&D work on various topics: asset pricing with reinforcement learning, credit stress testing with machine learning, liquidity limit risk setting, KYC analytics and causality analysis

McKinsey & Company – Model Risk Expert, Paris-Brussels **2017 – 2018**

Senior Manager, within the Model Risk and Validation practice in Europe.
Lead teams for onsite review of French banks' capital internal models on behalf of the ECB.
Pillar 1 credit/market assessment of models with a focus on modelling, model governance, data and IT.

PHAST Solutions Group – co-Founder & MD, Paris **2010 – 2017**

PHAST Solutions Group is an R&D Fintech specialized in software components for high-dimension sensitivity analysis and algo trading.
Founded, directed the firm, and led the overall development and strategy (**up to 2M€ R&D Sales, 12 FTEs**).
More specifically, I was accountable for the following three objectives:

- Lead the group's consulting unit with banks, asset managers and private funds.
- As Product Manager, build the product strategy for Phast Solutions Software Suite, specialized in Risk Management and Factor Diffusion Modelling (Credit and Market Risks, Risk/Reward, Portfolio Analytics, Reporting, Regulatory Compliance). Pitch partners (software providers, investors, clients).
- Lead the Research & Development unit: (i) sensitivity/factor analysis in high dimension, (ii) risk premium for illiquid products, (iii) MiFID best execution principle in HFT.
- Lead and execute the delivery of various consulting engagements (see below "contract")

EURONEXT Funds360, Paris **2017**

Innovation Manager - contract

Euronext Funds360 is a Fintech specialized in market and static data digital provider for fund management. The company started a reflection on its R&D and innovation strategy. It aims to increase its production capacity, provide new services to its customers, and create new needs in its market to initiate disruptions. <u>The technologies considered covered a wide range of applications related to Artificial Intelligence (process automation using cognitive and adaptive computer programs).</u>
I accompanied the FinTech in facilitating the whole design thinking phase from identifying the right targets and selecting the relevant technologies to building uses cases. I thus brought support in the setting up of the innovation pipeline.

FINUTS (Early-stage development), Paris/Madrid **2016 – 2017**

Lead Data Scientist

FINUTS was a seed-level startup building an AI-powered mobile app to provide financial advice and education on saving and investing based on users' behavior analysis, using alternative data and transactions data. "Your daily personal fin-life companion". <u>I oversaw the design of the AI/ML algorithms (Python) for the financial recommendation engine.</u>
Unfortunately, the project did not go through for lack of short-term funding. Over 6 months, the founding team undertook the MVP development and the go-to-market strategy.

Active Asset Allocation, Nice (France) **2016 – 2017**

Lead Quant Expert in Equity Structured Products - contract

Active Asset Allocation is a Fintech specialized in institutional and mass affluent wealth management, offering a Digital Sales platform for financial advisor, called RAFA© "Robo Allocator for Advisors".
In response to a market study of existing digital sales platforms for investment advisors led by the BNP Paribas' Structured Equity Products Team based in Paris, I acted as the Quant lead to design a POC (Matlab) for the <u>integration of various structured equity products (autocalls Athena, Phoenix) within a long-term market scenarios</u> engine to simulate the product payoff as part of the sales process toward wealth management clients.

Société Générale CIB, Paris-NYC-London **2016 – 2017**

MRM Audit Review, Project manager of the Initial Margin Model validation - contract

As part of the MRM audit reviews, under SR 11-7 guidance letter, I joined the Paris/NYC joint team responsible for the <u>validation of internal model of Initial Margin (SIMM) for uncleared OTC</u> on US Phase 1 counterparties for NYC (Fed) and London (FSA) – Second Line of defense. I led a team of 4, in charge of:

- Stream 1: Implementation of sensitivities calculation (process & data quality)
- Stream 2: Eligibility assessment (Entity and Product decision trees)
- Stream 3: Vendor Tool Soundness (Trioptima MarginSphere II)

Caisse des Dépôts et Consignations, Paris 2014 – 2016

Lead Market Risk Quant - contract

Audit and recommendations for the enhancement of IR OTC CCR model (products included IR swaps, swaptions, CCS, Repos). In charge of the project for designing, developing, and implementing the solution. We built an MVP (Matlab) comparing alternative models to help the decision with clear actionable KPIs. We finally chose a sensitivity linear projection method based on a replicating portfolio of IR and FX risks.

Lead Credit Quant, Manager - contract

Modelling and implementation (SAS) of the new internal rating model for corporate counterparties. I facilitated the definition of the business target and deliverables with analysts and Credit Risk Officer. I designed the whole solution based on Multifactor data analysis, Multinomial regression approach to rating modelling and performance tests. Conduct of change and follow-up with the Validation Team.

Natixis – Group Risks department, Paris 2011 – 2013

Market and Counterparty Risk Quant Analyst, Manager - contract

- Project #1: Design and implementation of the Stress Tests framework for +5000 Factors all asset classes (Matlab/Shell/Perl) in the project approval of the internal model for the counterparty risk measure (xVA)
- Project #2: Design and implementation of a Cartography methodology (Matlab/Shell/Perl) measuring contributions of risk factors to the exposure measure (EPE, PFE)
- Project #3: Backtesting of the EEPE measure using dimension reduction of calculations by identifying groups of risk factors and principal counterparties via the existing risk sensitivities
- Project #4: Designed a multi-application and multi-job combination portfolio position identification solution

GSD – NRJIA (Commodity Hedge Fund), Paris 2011

IT and business expert - contract

Supervised the design and the implementation of a proprietary tool (C#) for monitoring performance and risk within an alternative investment strategy on energy commodity markets.

La Banque Postale – Risks Department, Paris 2010 – 2011

La Banque Postale has France's biggest customer base in retail banking.

Credit Risk Quant, Manager - contract

As a manager consultant, responsible for launching and then managing a team of 3 people in charge of the implementation and calibration of various credit risk models for risk monitoring and regulatory capital.
I defined the overall workflow of analysis with end-users and co-designed the IT architecture of the tools, specified, and ran tests (full stack C#). Tools were integrated into the management process, delivering key figures to the Risk Committee (VaR, ES, risk/return ratios, effective maturity, portfolio PDs, diversification ratios…)

La Banque Postale – Risks Department, Paris 2007 – 2010

Market and Credit Risk Quant

Worked at the enhancement of risk analysis capacities and processes (C#, VBA, Matlab): credit scoring model (ratings and PD) for banks and corporate counterparties, exposure limits governance, credit portfolio risk measurement tool (PD, LGD, EAD, correlation, MC simulation with variance reduction), methodology of risk analysis for trading and banking books' monitoring (portfolio management quantitative risk indicators, risk/reward analysis, economic capital). Pricing of interest rate products (Cap/Floor, IRS, CMS, TEC10, Bermudan swaptions, range accrual).
Asset Management subsidiary, LBP AM
Design and implementation of the KPIs for portfolio performance control.

CACEIS – Operational Risk Analyst, Paris 2005 – 2006

Design and execution of the Risk and Control Self-Assessment framework for the broker and custody activity.

MENTORING, TRAINING, TEACHING

Fin-ML, Montreal – since 2019
Mentor to PhD student as part of the mentorship program
PRMIA, Montreal – since 2019
Board member, collaborating in animating the local and Canadian Risk community
ACI Monaco, Monaco – 2016-2018
Joined the association as a volunteering trainer on "Fintech 101" to private bank professionals from Monaco
Renaissance Finance & ORSYS, Paris, Monaco, Geneva – 2012-2017
Professional trainer in "Counterparty and Credit Risk", "Basel II/III regulation" and PD/LGD modelling" to financial consultants, bankers and statisticians.
Université Paris 1 Panthéon-Sorbonne, Paris – 2007-2017
Lecturer on Credit Derivatives (CDS, CDO, …) in Master of Research.
Tutor of more than 10 Master theses on various financial topics.
Leonard de Vinci Business School, Paris – 2009-2011
Lecturer on "Non-gaussian market risks" and "Alternative risk measurement techniques" to MSc. programs.

ACADEMIC ROLES

Laboratory of Excellence for Financial Regulation (LabEx ReFi), Paris/NYC/Zurich – Board member
March 2015 – March 2018 - labex-refi.com

- Member of the Executive Committee of Labex ReFi (research consortium lab gathering 4 prestigious research institutions: CNAM, ENA, Paris Sorbonne, ESCP-Europe)
- Director for Financial Databases (resource management 200K€, acquisition strategy, execution, and communication). Participating in the research strategy, recruitment policy, research, and communication events, thought leadership at professional/academic events,

COMMUNICATIONS

Thought leadership, communications and research articles on credit risk, FRTB and risk premium
Since 2007 – My author page ssrn.com

Thought leadership & Professional events (selection)

- HEC Forecast Conference – Montreal – March 2020

Panelist - The Role of Consulting in AI Transformation

- McGill Quant Finance Conference AI – Montreal – Feb. 2020

Panelist - AI risks in Finance
Moderator - What is Quantitative Finance?

- PRMIA Canadian Risk Forum – Montreal – Oct. 2019

Moderator, panels on "Risk and Asset Allocation" and on "Risk Management Digitization"

- WBS Conference on FRTB – London – Feb. 2016 and CFP Conference on FRTB – London – April 2016

Professional conferences, supported by the publication of a research article
"Trading book and credit risk: how fundamental is the Basel review?, Journal of Banking and Finance, co-authored with Jean-Paul Laurent and Michael Sestier (Paris 1), downloadable here

- MWA Conference "Wednesdays of Finance" - Paris November 2012

"Credit Valuation Adjustment: the big data challenge", professional communication

- RESEO Symposium, La Poste - Paris, May 2009

"Financial risk measurement: a state of the art", professional communication

Official Research Papers presentations

- 9th International Risks Forum – Paris – March 2016

"Trading book and credit risk: how fundamental is the Basel review?, Journal of Banking and Finance, co-authored with Jean-Paul Laurent and Michael Sestier (Paris 1), downloadable here

- FEBS/AFFI – Nantes – June 2015

"The credit risk premium: from consistent probabilities of default to illiquid assets valuation", working paper, co-authored with Thierry Chauveau (Paris 1)

- Labex ReFi Symposium - Paris, October 2013

"Valuation of non-quoted CDS with expected default probabilities", working paper, co-authored with Thierry Chauveau (Paris 1)

- Global Conference on Business and Finance - Hawaii, US, January 2012

"Entropy calibration of spectral risk measures", working paper

- C.E.S. Symposium, Université Paris 1 Panthéon-Sorbonne - Paris, June 2011

"Entropy calibration of spectral risk measures", working paper