



Executive Summary

AUTONOMOUS-FOX LABORATORIES Foundational AI for
Financial Markets

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Who We Are

Autonomous-Fox Laboratories ("AFLabs") is a UK-based deep-technology research lab building foundational artificial intelligence for financial markets. The company is developing a general-purpose modelling layer for market behaviour: a system designed to learn, update, and maintain coherent representations of how assets behave, individually and in relation to one another, as market conditions evolve.

The research programme draws on twelve years of academic and applied work in financial market modelling, including earlier systems that demonstrated the value of behavioural state inference in live trading environments. AFLabs extends that line of work using methodological advances that have now matured sufficiently to make this feasible.

The company is pre-revenue, research-led, and IP-focused, creating foundational modelling infrastructure and licensing its technology to quantitative trading and market-making clients.



A Foundational Gap in Market Modelling

Deep learning transformed language and vision by making it possible to learn reusable representation layers that could support many downstream tasks from a common foundation. No equivalent shift has occurred in financial markets.

Despite decades of investment and thousands of researchers, production trading systems remain collections of narrow-scoped, task-specific models built primarily on linear methods, gradient-boosted trees, and hand-engineered features. Financial markets are non-stationary, adversarial, and characterised by extremely low signal-to-noise ratios. Architectures designed for stable data distributions have repeatedly struggled to generalise consistently as market conditions change. In practice, this forced the industry toward narrower modelling approaches, because isolating problems into smaller, task-specific systems was the only reliable way to manage the complexity.

As a result, trading systems do not scale. Complexity grows faster than performance. Adaptation occurs through continual retraining and manual intervention rather than through a coherent, evolving representation of market behaviour: a modelling layer that downstream models can condition on to shape and update their understanding of assets autonomously as market conditions and context change. No major quantitative firm has publicly claimed to have built a general-purpose model of market behaviour, despite the obvious value of one.

This is the foundational gap in financial markets: the absence of a modelling layer that could act as the foundation for a reusable, general-purpose AI capability in this domain.

What Has Changed

Recent advances in self-supervised representation learning, sequence modelling, and geometric deep learning provide methodological tools better suited to uncertain and non-stationary environments. These advances create a genuine technical opening, but adapting them to financial markets requires substantial new research: novel architectures, new training methodologies, and validation under the low signal-to-noise ratios and continuously shifting conditions that define the domain.

Building a Foundation Model for Markets

AFLabs is developing a general-purpose model of market behaviour organised around three interconnected research streams:

- Discrete tokenisation of market behaviour into learned latent representations
- Fine-grained state inference over those representations
- Relational graph modelling of dynamic cross-asset structures

Each stream builds on the one beneath it, forming an intentional architectural sequence: tokenisation produces the representational foundation, state inference discovers behavioural structure within it, and the graph layer extends that structure across assets. Together they are designed to produce a reusable modelling substrate for financial markets.

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Preliminary experimental work on the tokenisation layer supports the feasibility of learning richer and more granular behavioural structure than conventional approaches can resolve. The learned abstractions have been shown to capture semantically distinct behavioural modes, and sequence models applied to them have demonstrated the ability to learn generalisable temporal structure.

Why the Upside Is Asymmetric

Most quantitative trading operations scale linearly: each new strategy requires its own modelling effort, and complexity grows faster than performance. A foundational market model scales differently, because the same underlying representations can support systematic trading, market making, execution, and risk infrastructure simultaneously, with value compounding as more applications draw on shared research rather than rebuilding it. This form of leverage requires long-horizon foundational research whose returns emerge across many downstream systems over time, an investment profile that does not fit naturally within organisations built to improve strategy performance and deploy models into production. AFLabs is structured specifically to pursue this opportunity.

Team and Stage

AFLabs is founded by Dr Dimitri Malandreniotis, with a doctorate in machine learning and computational statistics and twelve years of combined academic and applied experience in machine learning for financial markets.

Initial hiring priorities are two senior research scientists at co-founder level, with active discussions progressing with multiple candidates, and two PhD-level researchers. A structured research collaboration with University College London is in place through the Industry Exchange Network programme, with funded doctoral studentships in discussion. Over time, these university programmes are intended to provide a pipeline through which exceptional early-career researchers can be identified, trained, and brought into the company. The objective is to build a leading specialist research team in applied machine learning for financial markets, scaling to around twelve researchers within two years, and more quickly if funding allows.

Current Raise

AFLabs is currently raising an initial seed round to complete its founding research team, make additional early hires, establish the core infrastructure required for its research programme, and support funded doctoral studentships. The round is intended to provide approximately two years of runway, taking the company through the next phase of foundational research and toward an initial deployable version of its core modelling framework. The company intends to raise under EIS and is progressing the advance assurance process.

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