Lusis Disrupts the Capital Market Industry with AI and Data Science Solutions

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P a y m e n t s

The applications for artificial intelligence and data science are infinite; in many ways, we've only begun to tap in to their potential. AI includes tools such as machine learning, natural language processing and deep neural networks — technology that is improving efficiency in nearly every industry. One of the areas where AI has more recently become a disruptive technology is in capital market applications.

After launching a dedicated AI department in 2017, Lusis Payments is creating AI-based trading strategies and other FinTech solutions in addition to the global retail payments software and services we are known for.

In the area of AI, Lusis is especially focusing on deep learning because of its incredible power and flexibility for problem resolution. Today, we offer a wide range of FinTech products and services for capital markets. Our core competence is FX trading, and we offer additional solutions for the following:

- CFDs, options futures and equities
- Advanced systems and tools, including algorithmic trading, market making, backtest engine and trading strategy alerts sent to mobile applications

Using AI for Trading Strategies

Lusis Payments has spent five years using data science approaches to analyze and improve our trading platform. We created a dedicated AI department because we see the potential for AI to change end-to-end trading, automatic trading and portfolio management. In fact, our experts predict that AI will influence every aspect of capital market applications.

Lusis solutions for trading strategies allow the creation of models capable of discovering patterns in time series (market prices) to determine future moves. Although this seems straightforward and simple, many challenges accompany this task, making it difficult to achieve.

Lusis has deep knowledge of the specificity of time series in the field of machine learning, and we have developed pure AI-based trading strategies

that run on live data to ensure accuracy.

The Benefits of AI and Data Science in FX Trading

According to a Gartner survey, organizations in the banking and investment services industry are more likely to actively invest in machine learning and virtual customer assistants than those in other industries. Furthermore, the capital market industry is typically willing and able to capitalize on emerging technologies and use them to create value for clients.
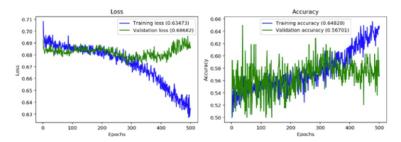
Unlike other machine learning approaches, such as random forest, deep learning includes architecture as a concept. Many of today's approaches use increasingly more hybrid models, mixing different types of neural network technology to create more complex architectures with "building blocks" that work together, each resolving a part of the problem.

Lusis is committed to advancing our research and work with AI for capital markets solutions because of the many benefits this technology can offer — benefits such as the following:

- Analyze vast numbers of documents accurately and in less time using custom machine learning, neural networks and analytics
- Enable agents and advisors to access the right insights quickly
- Answer customer questions faster
- Use AI for algorithmic trading, qualitative analysis, automated trade execution, managing risk and more
- Acquire, identify, recognize, and analyze structured and unstructured databases
- Derive insights and envision processes, as well as put them into real-time use cases
- Augment decision-making and automated processes
- Deliver personalized financial planning

The Risk of Overfitting

In machine learning, overfitting management is one of the first and most crucial things people learn. Balance between over- and underfitting is called the bias/variance trade-off, which must always be considered. There is no absolute optimal trade-off to retain; everything depends on the domain and the goals set.

The loss and accuracy during Deep Neural Network training

While overfitting is a basic concern for every systematic trader, some are ignoring it, instead creating technical trading strategies with parameter optimization without separating an optimization period from a validation period. As a result, they never validate their strategy on unseen data, which leaves them with no way to ensure their strategy has not been affected. If it has, then going live will only deliver disappointment.

When applying machine learning methods to trading strategies, Lusis Payments uses three data sets from the same time series and without overlap:

1. A training set, used in the learning step
2. A validation set, used to evaluate the model on unseen data
3. A test set used, to select between different candidate models

It's important to avoid overusing test sets to fine tune the model, as this would increase the risk of overfitting by implied knowledge transfer. Additionally, using deep learning consistently and conforming to the guidelines have allowed Lusis to create pure AI-based trading strategies, which today run on live data.

Deploying Blockchain-Based Technologies in the FX and Electronic Banking Space

Lusis Payments has various projects that use blockchain-based technologies, which provide three main benefits:

- The decentralized database, often referred to a distributed ledger
- The secured commitment multiplayers system without a trusted third
- The concept of smart contract, which can be used and deployed in an infinite range of situations

Prime brokerage can make extensive use of blockchain-based technologies for settlement, reconciliation and payment transfer. Lusis already implements blockchain consigning for deals directly accessible by counterparty. Smart contracts can be efficiently used for all OTC products, as well as for investment banking where nonrepudiation is a key feature.

Lusis Products and Services in Development for FX Market Participants

Lusis Payments is working to create specialized modules that are built and delivered as microservices. With the use of Docker, these microservice modules are easy to install, and they integrate with any infrastructure. Thus, a market participant can use them through an API, without facing an immense integration process or changing existing solutions.

Lusis also is working toward implementing cloud-based services for various applications, including the following:

- **Artificial intelligence module:** Ready-to-use models for predicting the trade flow, daily broker expected volume and the short-term trend at specific hours

- **Auto-trading environment, including a backtest engine:** An "all-in-one" solution, delivered in a ready-to-use Docker on the Lusis managed cloud
- **Depth of market management engine:** An API sends a depth of market (DOM) source and receives a customized market maker DOM

The Lusis Delivery Model

The Lusis capital market platform is based on a microservice architecture that provides high capacity, high availability and superior flexibility. Our platform is hardware- and middleware-independent and can support cloud-based deployments.

All Lusis Payments software can run in a cloud architecture, which is enormously beneficial when displacing data centers, hardware evolutions, connectivity issues and infrastructure. We make extensive use of Docker, and we get the best of each main provider (Azure, AWS, Google) in order to accelerate solution deployment.

Lusis software delivery is based on one of two models:

- A software license model where the client manages the software operations
- An on-demand license service, or software as a service (SAAS)

Based on the requirements and size of your needs, Lusis works with you to determine the best approach for your organization.

Learn more about Lusis Payments and how we're putting AI to use by visiting LusisPayments.com

About Lusis Payments

Lusis Payments is an innovative global software and services provider to the payments industry. Our proven, cutting-edge technology operates in numerous hardware and operating environments. The TANGO platform, combined with the know-how to mitigate risk and deliver high levels of assured customer service, constitutes a unique proposition for organizations faced with the challenge of adapting to traditional and future needs in the payments ecosystem.

Central to the Lusis solution is TANGO, an online transaction processing engine for mission-critical 24x7 solutions including payments, retail, loyalty, finance, utilities, and transport. TANGO delivers performance, availability, and scalability, with a rich set of functionalities, all from a single application, a single code set and a single architecture. This flexibility and organizational dexterity makes TANGO ideal for the next generation of retail payment systems. TANGO is built on a highly performing micro-service architecture providing agility for your business needs.

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