Volume 6, No. 4 | July–August 2023

RAIL

The Journal of Robotics, Artificial Intelligence & Law

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Publishing Staff
Publisher: Morgan Morrissette Wright
Production Editor: Sharon D. Ray
Cover Art Design: Juan Bustamante

Cite this publication as:

The Journal of Robotics, Artificial Intelligence & Law (Fastcase)

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A Full Court Press, Fastcase, Inc., Publication

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729 15th Street, NW, Suite 500, Washington, D.C. 20005
https://www.fastcase.com/

POSTMASTER: Send address changes to THE JOURNAL OF ROBOTICS, ARTIFICIAL INTELLIGENCE & LAW, 729 15th Street, NW, Suite 500, Washington, D.C. 20005.

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ISSN 2575-5633 (print)
ISSN 2575-5617 (online)

Using AI for Competitive Advantage

David L. McCombs, Dina Blikshteyn, Eugene Goryunov, and Nicolette Nunez*

In this article, the authors explain that artificial intelligence is being implemented across the banking field to gain competitive advantage but that, at the same time, those using this technology should be aware of the pitfalls to minimize liability down the road.

Financial institutions around the world have made many uses of artificial intelligence (AI), including the "automated trading and investment discovery, trading strategies, robo-advisors, voice-based commerce, customer behavior analysis, and chatbots for customer services, identity verification and fraud detection."[1] In fact, some banks, such as J.P. Morgan Chase, have fully funded and developed entire AI research sectors intended to find innovative and productive ways to use AI in investment banking.

AI implements predictive analytics using neural networks to comprehensively analyze past and present data points and provide financial predictions. These predictions include, for example, how certain investments might perform in the future, whether an investment is particularly risky, whether an investment might be fraudulent, how likely a trade or transaction is to settle or fail, etc. Basically, financial institutions are using AI to cull through a tremendous amount of data and render investment suggestions based on an analysis of the data. The basic math is not particularly innovative; processing large amounts of data using the math to arrive at a "well-reasoned" and "mathematically tested" investment recommendation, on the other hand, is cutting edge. Using AI in such ways can increase a financial institution's efficiency, free up resources that can result in savings or reallocation, and quickly provide analysts with information to assist in more informed decision-making. This is particularly important in an industry where time is money and having access to data analytics in seconds may earn a company thousands if not millions.

Robotics, Artificial Intelligence & Law / July–August 2023, Vol. 6, No. 4, pp. 271–275.
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ISSN 2575-5633 (print) /ISSN 2575-5617 (online)

Current Uses

As an example, Ernst & Young has developed an AI-powered "Smart Advisor" that utilizes historical pricing data and the bank's deal-structuring expertise to give relationship managers real-time, contextually relevant pricing intelligence.[2] J.P. Morgan Chase's AI research center has published numerous studies on the diverse capabilities of AI. In one study, researchers assessed the feasibility of fully replicating an agent's trading behavior by developing an "agent-based model for trading in a limit order book [to] show (1) how opponent modelling techniques can be applied to classify trading agent archetypes and (2) how behavioral cloning can be."[3]

Similarly, AI has been implemented in asset management. Goldman Sachs uses "data-driven investment models that can objectively evaluate public companies globally through fundamentally-based and economically-motivated investment themes"[4] in its quantitative analysis strategies. Indeed, the CFA Institute Research Foundation explained in 2020:

> AI techniques can be used to perform sophisticated fundamental analysis, including the use of text analysis, and to optimize asset allocations in financial portfolios. Amid various challenges of conventional portfolio optimization approaches, AI techniques often provide better estimates of returns and covariances than more conventional methods do. These estimates can then be used within traditional portfolio optimization frameworks. Moreover, AI can be used directly for asset allocation decisions to construct portfolios that meet performance targets more closely than portfolios created using traditional methods.[5]

These examples are just the tip of the iceberg. AI has many other broad and specific applications in the financial sector. Deutsche Bank is using AI to perform an initial classification of how "green" a financial transaction is based on data provided by the corporate client detailing how green their business is; these efforts will "take an enormous amount of work off our customer advisors . . . shorten[] standard processes and ha[ve] a low carbon footprint."[6]

Today, generative AI, such as chatbots, is gaining popularity and offering unparalleled business use. It is only a matter of time until investment banks and other financial institutions begin to adopt

chatbots in various scenarios. Chatbots can enhance customer experience by answering questions posed by investors or employees regarding various investment vehicles, companies, portfolio recommendations, or investment strategy. Chatbots can also be used to collect information from existing and potential customers, including customers' personal information during an onboarding process, risk tolerance, monetary contribution, and the like. Finally, chatbots can be used to automate tasks, such as handling customer complaints. In all, chatbots can enhance customer experience, increase revenue, and reduce customer service cost.

Potential Pitfalls

While using AI is attractive and has considerable benefits, the institutions must also be cognizant of AI pitfalls. Today, AI is trained on data—it learns by examples. The more diverse the data, the more use cases AI can cover when it is being implemented in the real world. Some of the data, such as market data and trading data, that AI uses for analytics and investment predictions may be readily available. Other data may not be available, and AI engineers may implement creative approaches for obtaining and gathering data. There are several problems with this approach.

First, the data owner may not have given permission for another party to copy and use the data.

Second, once AI is trained on this data, it may be difficult, if not impossible, to remove the data from AI if a party did not have permission to use the data. There is nothing worse than having an adverse court decision instructing a party to remove the data from AI when such data cannot be removed. This in turn may result in AI being retrained on permitted data—a process that may be expensive and take months.

Using customer data to train generative AI for improving customer experience also has pitfalls. Customers have expectation of their personal and financial data to remain private, and institutions may be required to obtain consent before using the data. One way to alleviate this issue is to include a provision in the terms and conditions for opening an account that authorizes a party to anonymize and use customer data to train AI. Anonymizing data, however, will not help with bias. For example, customer data may have inherent bias toward certain individuals based on race, age,

sex, color, ethnicity, national region, or on a more granular level, region or zip code simply by virtue of the type of people accessing or working at the institutions. Biased data trains biased AI, and precautions should be taken to reduce and minimize bias. This is particularly important in light of AI-driven legislation implemented across various states and the discrimination, explanation, and notice provisions included in the AI Bill of Rights that the White House released in 2022.

Generative AI that employees use internally also presents pitfalls. Generative AI is trained on user prompts. Those prompts, if not filtered or monitored by the employer, may include sensitive data, including confidential information or employer trade secrets. This sensitive data may be disclosed once AI is trained and implemented in the real world. Accordingly, protections need to be put in place that filter sensitive data when AI is trained along with employee training on how to train and use generative AI.

Conclusion

In all, AI is a cutting-edge technology that is being implemented across the banking field to gain competitive advantage. At the same time, those using AI should be aware of the pitfalls to minimize liability down the road.

Notes

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