

Emerj Artificial Intelligence Research

At Emerj Artificial Intelligence Research, we have a singular and powerful focus:

“Mapping what’s possible and what’s working in artificial intelligence in order to help leaders develop winning AI strategies.”

We create cutting-edge AI impact research, inform executive leadership, and make important contributions to important decisions around governance, innovation, and strategic planning. We’re called upon by many of the largest and most reputable organizations in the world:



Our research focuses on three critical aspects of AI capabilities:

- **Applications (“What’s Possible?”)** – Examining the landscape of AI applications, open-source tools, and use-cases that might solve organizational problems, or impact strategy.
- **Implications (“What’s Working?”)** – Determining the use-cases with a genuine track-record of ROI, and determining the integration costs and potential financial upside of AI applications.
- **Plans (“What to Do?”)** – Informing strategy by honing in on the AI trends or capabilities most likely to deliver the desired results or the organization.

Through our [AI Opportunity Landscape research in financial services](#), we help clients win market share and make more profitable decisions – with a firm grounding in the current realities of the AI landscape.

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1. AI in Financial Services Use-Cases

Investing

Wealth managers and traders could use natural language processing (described in the Glossary section) for investment research purposes. An NLP software could scour the web for news about mergers and acquisitions. They could also look for the sentiment around certain companies to get an idea of how consumers are reacting to them. This capability is called sentiment analysis (also described in the Glossary section).

This could give traders, wealth managers, and investment bankers an idea of which stocks might soar or plummet and allow them to make a more informed decision on what to do with a client's stocks in the moment.

In addition, financial services companies could use predictive analytics software that would essentially predict which stocks will yield the highest return. The software would run through thousands of stocks at once and correlate certain data points among them to positive stock returns, thus freeing up a chartist's time for higher-value tasks. A prescriptive analytics software would take this a step further and suggest which stocks a trader should buy or trade at any given time.

Digitizing Paper Documents

Perhaps one of the biggest challenges large financial services firms face when they're looking to adopt AI is that large volumes of their historical data are stored in paper documents, not digital spaces. Machine learning models are necessarily trained on digital data, and so financial services companies need to make sure they digitize their old documents before they hire data scientists to build AI solutions or purchase AI software from vendors.



Fortunately for them, there is machine vision software (described in the Glossary Section) available to help digitize paper documents. Employees at financial services firms could scan paper documents into PDFs and upload them to the document digitization software. The machine vision algorithm could then run through the PDFs and “read” what they say, populating fields on a digital version of the document with the words in the PDF.

Searching Through Large Databases of Documents

Perhaps second only to document digitization, financial institutions often struggle to search through their massive stores of digital documents and find the information they’re looking for. Natural language processing could help with this.

Document search and data mining are broad functions that could help employees at financial services companies in a variety of ways. For example, document search functionality could help lenders mortgage and loan applications to find out if they’re missing any information, among other use cases. This could allow employees at the financial services firm that would normally review documentation manually to instead focus on more complex tasks.

Search systems could also cluster paragraphs of disparate documents in a way that allows an employee at a financial institution to organically type into a search bar and find a series of sections from multiple documents that serve their intent. In essence, NLP could allow for a more nuanced, context-laden “Ctrl F” function that spans a company’s entire database of documents.

Underwriting

Natural language processing could allow lenders and insurance firms to mine an applicant’s public web activity, such as their social media posts. This would allow them to determine if the applicant shows signs of trustworthiness on public forums. A lender might be less willing to underwrite a loan for an individual who consistently posts about avoiding their landlord because they don’t have money for their rent, for example.

Some companies also offer machine vision software to insurance firms that sell property insurance. Their machine vision algorithms run through satellite images of a piece of property and point out aspects of that property that might be of interest to an insurer, such as a trampoline, pool, or trees that might be prone to falling. This would save an insurer from having to send an employee out to the property to inspect it.

Other companies offer predictive and prescriptive analytics software for underwriting. Financial services companies would first upload historical customer data into the software. This data could include customer loan and insurance payments and whether or not they were paid on time, among a plethora of other data points.



The software would then use this data to calculate the likelihood that new customers with characteristics similar to past customers are to pay back their loans or get into a car accident, for example. Underwriters could then make the final decision on whether or not to underwrite a loan or insurance policy.

Credit Scoring

In a similar vein, some companies take the predictive analytics approach a step further. The software could churn out credit scores that take more than a customer's past credit history into account. Instead, these scores could factor in the characteristics that might indicate trustworthiness based on the firm's past customers.

More robust credit scoring software might also incorporate natural language processing and machine vision for scouring applicant social media posts for signs of trustworthiness, as discussed earlier.

AI-based credit scoring software could be helpful for loan applicants that lack a credit history but otherwise behave in ways that indicate a high likelihood of paying back their loan or paying off their credit cards on time.

Fraud Detection and Anti-Money Laundering

Anomaly detection (described in the Glossary section) has been helping financial services companies with fraud detection and anti-money laundering (AML) since the early 2010s.

In order to make use of anomaly detection software, financial institutions often need to integrate the software into whatever system they use to field transactions. The software would then develop a baseline of normal transaction activity, "learning" the data points that correlate to a legitimate transaction. When a transaction enters the system that is far enough off the baseline, the system would then flag the transaction as potential fraud or potential money laundering.

2. AI in Financial Services Glossary

Predictive Analytics: Predictive analytics is a type of machine learning software that predicts an outcome based on historical data.

Computer Vision/Machine Vision: Computer vision, also known as machine vision, is a type of machine learning software that analyzes images and videos. Oftentimes computer vision systems are set up with cameras for analyzing video feeds in real-time.



Natural Language Processing: Natural language processing is a type of machine learning that can discern the intent and meaning behind typed text.

Sentiment Analysis: Sentiment analysis is a subset of natural language processing that focuses on discerning the sentiment of a particular sentence or phrase, particularly whether or not it is positive or negative.

Anomaly Detection: Anomaly detection is a type of machine learning software used for flagging deviations from an established norm within a digital ecosystem. It is most often used for fraud detection and anti-money laundering use-cases.

3. AI in Financial Services Resources

Below we highlight three of our best, free resources available on Emerj.com, including a few of the most relevant insights for financial services leaders from each of them:

[AI in Banking – An Analysis of America’s 7 Top Banks](#)

Link: <https://emerj.com/ai-sector-overviews/ai-in-banking-analysis/>

- **Conversational Interfaces/Chatbots:** Banks such as Wells Fargo and Bank of America have launched conversational interfaces that help their customers access account information by simply asking questions in natural language and also perform basic operations such as funds transfers.
- **Fraud Detection:** Citibank and HSBC have invested in AI projects that help them augment the capabilities of their fraud detection and anti-money laundering teams.
- **Robotic Process Automation (RPA):** Large banks such as BNY Mellon and JP Morgan claim to be using RPA (which is not AI) to automate repetitive tasks in their businesses. These software bots are purportedly capable of tasks such as ensuring data is formatted in a certain way or extracting information from a document.

[How America’s Top 4 Insurance Companies are Using Machine Learning](#)

Link: <https://emerj.com/ai-sector-overviews/machine-learning-at-insurance-companies/>

- **Chatbots:** Large insurers like Allstate and Progressive have launched customer service focused conversational interfaces that can help with customer account servicing, respond to internal agent inquiries and provide guidance on business protocols to human customer service reps.
- **Driver Performance Monitoring:** State Farm and Liberty Mutual are among insurance firms that claim to have developed machine learning algorithms are being applied to client data to help inform the development of products for insurance clients. (see below).



- **Insurance Market Analytics:** Progressive claims to be using machine learning algorithms to interpret driver data in an effort to identify business opportunities and reduce risks. Under the program, customers with safer driving habits might be offered insurance with lower premiums.

[Intelligent Search in Banking and Financial Services – Current Capabilities](#)

Link: <https://emerj.com/partner-content/intelligent-search-in-banking/>

- **Enterprise Search – Then and Now:** A discussion of what has changed from the enterprise/document search functions of the past to now, particularly how machine learning has improved them.
- **What AI and ML Bring to Enterprise Search:** A deep-dive into Emerj’s research on AI-enabled search applications in financial services, with an emphasis on the capabilities AI and ML now bring to financial services firms looking to search their extensive backlogs of documents.
- **Use-Case Overview:** An analysis of capabilities such as enrichment and classification; unified view of the customer; and concept and advanced entity search.

4. Emerj Artificial Intelligence Research

Emerj Artificial Intelligence Research is where executive leaders turn to understand how AI is impacting their organization or industry – and what to do about it. We’re the industry source for authoritative market research and competitive intelligence for the business applications of artificial intelligence.

Our objective, jargon-free research and industry overviews are designed to give executives and decision-makers exactly what they need for competitive insight, informed AI technology procurement and strategic planning around AI.

With a finger on the pulse of academia, Fortune 500s, and the global artificial intelligence startup ecosystem, organizations call upon us for insight and research for their most important AI-related strategic decisions.





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