Case Study: Banking

Advanced AI/ML Solution Detects Check Fraud for a Global Bank

An AI-driven verification model is helping a leading global bank flag and address potential check fraud.

It is said that cash is king. Perhaps. But millions of checks are still handwritten each month. Unlike electronic payments or automated clearinghouse (ACH) transactions, handwritten checks must be verified by people one by one. Banks lose millions annually to counterfeiters.

Cognizant Digital Business is using artificial intelligence to help a large global bank build a machine learning solution to reduce the incidence of check fraud. Our solution teaches itself to identify counterfeit checks by comparing them to a growing database of previously processed ones.

At a glance

We developed an AI-driven machine learning solution to flag potential fraud by analyzing scanned images of handwritten checks, helping a global bank reduce fraud risk and lower costs.

Outcomes

Our model:

- Delivers a fast, accurate confidence score in less than 70 milliseconds on each check.
- A $20 million reduction in fraudulent transactions is forecast, based on current models.
- Lessens manual effort while keeping initial and ongoing costs low.

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Digital "eye" spots fraud

Check-processing time has sharply dropped in recent years because of ACH transactions. But while part of this process is truly automatic, including scanning paper checks, large banks still employ hundreds of people to sit every day at computer screens trying spot signs of fraud in those scans.

Our client uses optical character recognition (OCR) and deep learning technology to scan checks, process data and verify signatures. While many checks, such as for payroll, are easy to parse, handwritten checks remain frustratingly difficult to process.

Since a percentage of the funds deposited by check is made immediately available to depositors, identifying counterfeit checks quickly reduces the amount of money paid out to fraudsters at the teller window or at an ATM machine. Our objective is twofold: to spot fraudulent checks in real time at the time of deposit, and to reduce the number of checks requiring manual review. This stems the outflow of disbursements on counterfeits, lessens tedious work and reduces processing costs.

Near-human intelligence

Our machine learning technology is designed to automatically compare various factors on scans of deposited checks to a growing database of checks previously identified as fraudulent, to flag potential counterfeits in near real time. We expect to significantly improve the capabilities of our client's existing imaging and verification software to flag potential frauds among the millions of checks it processes every month.

Our model, derived from Google TensorFlow, adopts a neural network to parse a historical database of previously scanned checks, including ones known as fraudulent. This allowed us to rely on huge data sets of the variable elements on checks: payee, check number, account and routing numbers, amounts, endorsements, even the signature. We then developed a set of comparative algorithms to establish what is normative for good checks and what factors fall outside those norms.

We taught the neural network these rules; now it teaches itself. Our solution performs signature and image analysis automatically, without the need for secondary reference images. It analyzes images to confirm all necessary information is present. It identifies anomalies and delivers a confidence score almost instantaneously regarding whether a check is good, is manifestly fraudulent, or needs further review. This helps determine whether funds are made available to depositors — and how much.

We tested our model on a historical portfolio of past transactions; it demonstrated a 50% reduction in fraudulent transactions. Processing as many as 20 million checks a day, with end-to-end response times of less than 70 milliseconds and processing up to 1,200 checks per second, our model is scalable and configurable to the client's evolving needs.

Staying ahead of fraudsters

Our model forecasts up to $20 million in annual savings on fraud losses, while significantly reduces the operational cost of manual check validation. The more checks the system processes, the more accurate it becomes. We also provided the client with advanced analytics and performance tracking, giving the company increasing visibility.

Fraud is pervasive in financial services and counterfeiters constantly develop new ways to perpetrate it. Our solution operates with near human intelligence to counteract counterfeiters and reduce losses. Every transaction it processes adds to its enormous repository of historical information, which means it can continually learn the habits of habitual fraudsters to defeat them.

It's a win for our client, and a compelling example of how AI advances data science in financial services.

For more information, visit www.cognizant.com/ai.

About Cognizant Banking and Financial Services

Cognizant's Banking and Financial Services business unit which includes consumer lending, commercial finance, leasing insurance, cards, payments, banking, investment banking, wealth management and transaction processing, is the company's largest industry segment, serving leading financial institutions in North America, Europe, and Asia-Pacific. These include six out of the top 10 North American financial institutions and nine out of the top 10 European banks. The practice leverages its deep domain and consulting expertise to provide solutions across the entire financial services spectrum, and enables our clients to manage business transformation challenges, drive revenue and cost optimization, create new capabilities, mitigate risks, comply with regulations, capitalize on new business opportunities, and drive efficiency, effectiveness, innovation and virtualization. For more, please visit www.cognizant.com/banking-technology-solutions.

About Cognizant Artificial Intelligence Practice

As part of Cognizant Digital Business, Cognizant's Artificial Intelligence Practice provides advanced data collection and management expertise, as well as artificial intelligence and analytics capabilities that help clients create highly-personalized digital experiences, products and services at every touchpoint of the customer journey. Our AI solutions glean insights from data to inform decision-making, improve operations efficiencies and reduce costs. We apply Evolutionary AI, Conversational AI and decision support solutions built on machine learning, deep learning and advanced analytics techniques to help our clients optimize their business/IT strategy, identify new growth areas and outperform the competition. To learn more, visit us at www.cognizant.com/ai.

About Cognizant

Cognizant (Nasdaq-100: CTSH) is one of the world's leading professional services companies, transforming clients' business, operating and technology models for the digital era. Our unique industry-based, consultative approach helps clients envision, build and run more innovative and efficient businesses. Headquartered in the U.S., Cognizant is ranked 195 on the Fortune 500 and is consistently listed among the most admired companies in the world. Learn how Cognizant helps clients lead with digital at www.cognizant.com or follow us @Cognizant.

Cognizant

World Headquarters
500 Frank W. Burr Blvd.
Teaneck, NJ 07666 USA
Phone: +1 201 801 0233
Fax: +1 201 801 0243
Toll Free: +1 888 937 3277

European Headquarters
1 Kingdom Street
Paddington Central
London W2 6BD England
Phone: +44 (0) 20 7297 7600
Fax: +44 (0) 20 7121 0102

India Operations Headquarters
#5/535 Old Mahabalipuram Road
Okkiyam Pettai, Thoraipakkam
Chennai, 600 096 India
Phone: +91 (0) 44 4209 6000
Fax:: +91 (0) 44 4209 6060

Codex 3688