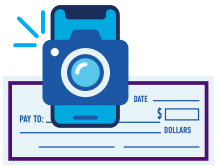
CHECK IMAGE ANALYSIS: HOW IT WORKS AND WHY IT MATTERS FOR MITIGATING CHECK FRAUD

Check image analysis uses technology to assess check images for various purposes, such as verification, fraud detection and record keeping. It has become a priority for financial institutions today as check fraud continues to increase.

WHAT IS CHECK IMAGE ANALYSIS?

Check image analysis technology captures a detailed digital image of a physical check, which is then processed and analyzed by specialized software to extract and verify relevant information.

1 Image Capture



Scans the front and back of the check to create a digital image using scanners or mobile camera devices.

2 Data Extraction

Extracts pertinent information, such as the account number, routing number, check number, date and amount from the digital image.

3 Validation

Validates the extracted data against known standards and databases to ensure it is accurate and authentic.

4 Fraud Detection

Analyzes the image for signs of alterations or forgery, such as mismatched fonts, signature irregularities and other anomalies.

5 Decisioning and Retention

Stores digital check images and extracted data in secure databases for future reference and compliance.

HOW CHECK IMAGE ANALYSIS WORKS

Check image analysis employs the technology and techniques shown in this step-by-step breakdown of the process:

1 IMAGE CAPTURE AND PROCESSING

The process begins with a high-quality image of the check. This may involve using a check scanner or a mobile device camera. The image may be processed to enhance quality — such as adjusting contrast and correcting distortion to ensure the image is in an optimal condition for further analysis.

2 DATA EXTRACTION

Optical character recognition (OCR) and intelligent character recognition (ICR) technology may be used to convert the text on the check image into machine-readable text. This includes recognizing and extracting information, such as the payee's name, the amount written in words and numbers, the date and other handwritten or printed details.

CHECK IMAGE ANALYSIS: HOW IT WORKS AND WHY IT MATTERS FOR MITIGATING CHECK FRAUD

3 VALIDATION

The extracted data is validated by comparing it with standard formatting rules and databases. For example, the software can verify that the routing and account numbers are legitimate and match the issuing institution's records.

4 FRAUD DETECTION

Check image analysis enables the identification of possible fraudulent checks. This can include detecting inconsistencies in fonts, signatures and ink patterns.

Algorithms, machine learning (ML) and artificial intelligence (AI) can be used to locate duplicate images across deposit channels and flag suspicious patterns based on prior returns or fraud patterns. Extracted check data also can be integrated with other cross-channel activity and fraud analytics to enable more holistic monitoring and identification of anomalous activity.

5 MAKING TRANSACTION DECISIONS AND RECORD RETENTION

After validation and analysis, the check image and its associated data are evaluated for a decision — either to be paid, returned/held or flagged for additional processes — and then stored. Financial institutions maintain digital records of checks, which can be used in fraud model enhancement, fraud dashboards and case management tools.

CHECK IMAGE ANALYSIS FOR FRAUD PREVENTION

As technology continues to advance, automation capabilities play an increasingly important role in preventing check fraud, including several key areas:

- **Accuracy and speed.** Developments in imaging technology and AI-driven analysis can improve analysis accuracy and processing speed. Enhanced OCR and ICR capabilities and AI/ML models can improve validation of check data.
- **Fraud detection techniques.** AI and ML models can be continuously trained on new fraud patterns, improving the system's ability to detect fraudulent checks and anomalous activity.
- **Integrated cross-channel data.** Automated integration of check image analysis with payment channels and account activity can enable more proactive and holistic fraud detection.

THE IMPORTANCE OF CHECK IMAGE ANALYSIS

Check image analysis can be an effective tool against the growing threat of check fraud. By combining high-quality imaging, data extraction and validation, financial institutions can identify anomalies, prevent losses and improve decision-making. As automation, cross-channel data integration and machine learning capabilities evolve, check image analysis will continue to play an important role in detecting check fraud.

CHECK IMAGE ANALYSIS: HOW IT WORKS AND WHY IT MATTERS FOR MITIGATING CHECK FRAUD

The check fraud mitigation toolkit was developed by the Federal Reserve to help educate the industry about check fraud and outline potential ways to help detect and mitigate this fraud type. Insights for this toolkit were provided through interviews with industry experts, publicly available research, and team member expertise. This toolkit is not intended to result in any regulatory or reporting requirements, imply any liabilities for fraud loss, or confer any legal status, legal definitions, or legal rights or responsibilities. While use of this toolkit throughout the industry is encouraged, utilization of the toolkit is voluntary at the discretion of each individual entity. Absent written consent, this toolkit may not be used in a manner that suggests the Federal Reserve endorses a third-party product or service.