```
mirror_mod.use_z = False
elif _operation == "MIRROR_Z":
    mirror_mod.use_x = False
    mirror_mod.use_y = False
    mirror_mod.use_z = True

    #selection at the end -add back the deselected mirror modifier object
mirror_ob.select= 1
modifier_ob.select=1
bpy.context.scene.objects.active = modifier_ob
print("Selected" + str(modifier_ob)) # modifier ob is the active ob
    #mirror_ob.select = 0
```

Straight-Through Receivables Reconciliations: AI and Machine Learning Boost Efficiency and Working Capital

Anupam Sinha
Managing Director,
Global Head of
Domestic Payments
& Receivables, Citi
Treasury and Trade
Solutions

Artificial intelligence (AI) and machine learning are integral components of a wide range of technology tools these days, redefining how both corporate treasury departments and the individuals who make up those departments do their jobs and live their lives.
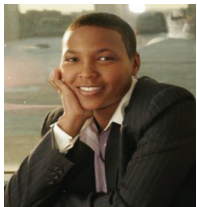
Lisa Davis
Managing Director,
Data Governance
Officer and Global
Head of Data,
Insights & AI, Citi
Treasury and Trade
Solutions

For individual consumers, AI and machine learning have shaped a wide range of experiences, such as shopping online, using their smart phones, and interacting with virtual assistants like Alexa and Siri, for example.

On the treasury side, banks that are on the leading edge of innovation are deploying these new-age technologies to help large organizations further automate and simplify how they manage their cash and working capital. Technologists at these banks are breaching new frontiers to help their customers do things like thwart unintended or unauthorized payments, match incoming payments to open invoices, and even optimize how they use online banking portals, to cite a couple of applications in a wide world of possibilities.

One thing is clear: Artificial intelligence, a computer's ability to simulate human intelligence, combined with machine learning, the computer's ability to "learn" based on sophisticated rules and algorithms applied to big data, offers real solutions to traditional treasury problems.

Focus on receivables

Take the reconciliation of incoming payments (known as cash application), for instance, where AI and machine learning can dramatically reduce manual interventions and create straight-through reconciliation rates that have never been seen before.

Over the years, reconciliations have become more and more complex because of the many options for collecting money and the disparities in how both payments and associated remittance details are submitted.

Missing or incorrect reference numbers, bundled or partial payments, invoices in different languages and currencies, and a host of other factors can all make it difficult to confirm payments, causing unwanted delays in posting and using a company's incoming funds.

In response, Citi has developed a solution called Citi® Smart Match that leverages the AI and machine learning technology of a fintech partner with Citi's own proprietary assets to create tangible benefits for its customers' businesses.

The AI portion of the solution features multiple software engines that read different sources of remittance information, such as emails, faxes, email attachments, remittance advices, and more to identify and extract critical payment details and data contained in them. It even includes engines that can discern information communicated via EDI and web portals.

Improving STR rates

The technology decouples remittance information and makes sense of it, in much the same way a human would, only much faster. AI actually exceeds the capabilities of standard optical character recognition technology to extract and aggregate information from all the various

data sources, normalize it, and create a single file with uniform and consolidated remittance data.

The remittance data file is then matched against a file that contains details on the company's outstanding receivables. Once the data in the two files has been matched, a file containing the results can be transmitted directly to the company's ERP system on a straight-through basis to achieve end-to-end reconciliation.

During the matching phase, the system also identifies items that cannot be matched and generates a report of unmatched items in a fraction of the time it takes a person to do it. The report can then be used by a company's employees to identify why the match couldn't be made and then manually input the missing or correction information into the system.

This is where machine learning comes in to further fine tune the automation process. Through programmed rules and algorithms, the bank's system recognizes familiar actions and patterns from the manual interventions and *learns* what the correct pattern or data point should be. Based on these learnings, the system can resolve future unmatched items on its own, which means that the unmatched items report gets smaller and smaller.

A win-win solution

Companies wield little control over their payers' behaviors, so automated cash application fueled by AI and machine learning is a win-win for both companies and their payers. Payers can continue to send their payments and remittance data in their preferred format, and companies can implement the solution with minimal or no IT involvement or costly and difficult system upgrades. Plus, the bank's system does the heavy lifting, automatically reading and matching payments received with payments expected.

It typically takes three to four months for the system to realize a sufficient pattern and to be able to achieve straight-through reconciliation rates in the 90% range. Availability of data is key. If there are significant gaps in data this is where the solution can expose them, allowing clients to identify ways in which to bring the necessary data into the ecosystem.

But the long-term savings in time, money and human effort are well worth the wait.

Staff time spent keying in errors can be reduced by up to 80%. Time spent handling exceptions decreases and operational efficiency increases. What's more, payments are posted faster, driving down days sales outstanding and boosting opportunities to optimize working capital.

Identifying payment outliers

Generally speaking, breakthroughs in AI and machine learning promise to move receivables automation into the same realm as straight-through processing rates for payables.

However, even payables, which have benefited tremendously from digitization and technology-based innovations over the past decade, will soon realize additional efficiencies thanks to AI and machine learning.

Citi, for example, is testing a solution that employs AI and predictive analytics to detect transactions that do not conform to an organization's routine payment patterns. The system uses multiple fields in payment transactions to train itself, recognizing payment norms and fine-tuning underlying algorithms over time. When payments that are out of the norm are detected, the system sends real-time alerts to a company's designated payment authorizers, before the payments are released, so that they can review and either approve or reject the flagged transactions. As a result, companies gain better control and monitoring of their payment flows, which leads to reductions in both errors and the subsequent losses that can result from them.

Citi has developed a solution called Citi® Smart Match that leverages the AI and machine learning technology of a fintech partner with Citi's own proprietary assets to create tangible benefits for its customers' businesses.
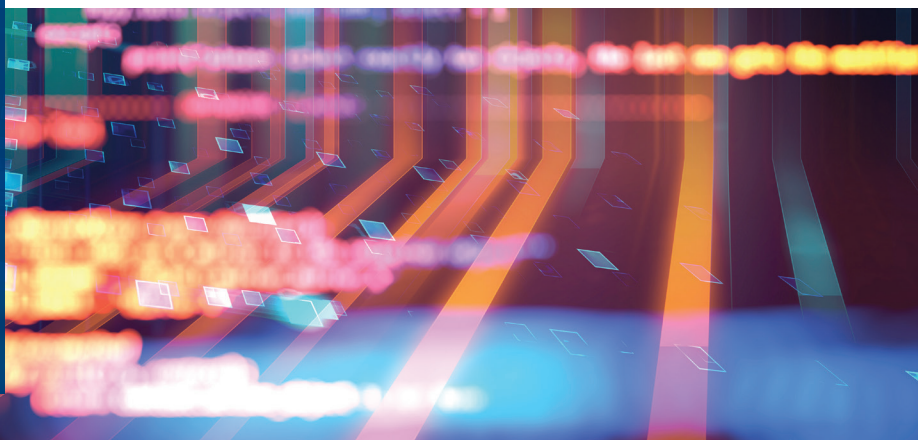
Optimizing time online

Citi also is testing AI-powered capabilities that will streamline the usage and navigation of its corporate online banking portal. The portal allows companies to manage accounts, payments, receivables, liquidity, trade, foreign exchange and reporting across multiple business units and geographies around the globe.

Machine-learning algorithms can predict, for example, what a user wants to do next and present options as links on the portal page. Algorithms that have learned users' established behaviors also can provide recommendations for navigating the feature-rich platform, and machine learning algorithms can even train bots to perform "intelligent chat," replacing human chat to respond in real-time to customers' online service-related questions.

Integrating capabilities and expertise

Institutions such as Citi want to leverage AI, machine learning, and other advanced tools and technology to expedite and streamline their customers' processes to save them valuable time and money. Citi also seeks to put new innovations to work for its customers as quickly as possible. That's why it works hand-in-hand with its customers from idea generation to solution testing. It is also why Citi is investing in, and collaborating with, specialized fintechs whose solutions and expertise can be coupled with Citi's own technology innovation capabilities, unparalleled global network and deep understanding of organizations' treasury challenges.

For companies looking for higher levels of performance within their own treasury operations, now is the time to learn more how AI and machine learning innovations that are available today can solve traditional treasury challenges.