Case Study

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Like other modern industries, the banking world is currently grappling with the changes brought on by the rise of technologies like generative AI, LLMs, and other machine learning tools. These advancements are revolutionizing how banks operate, offering exciting potential for boosting productivity, enhancing accessibility, and streamlining operations. With AI-driven tools, banks can better analyze data, predict customer needs, and personalize services to create seamless and efficient financial experiences.

Unfortunately, the development of AI will bring with it increasingly sophisticated attacks by bad actors harnessing that same technology. Generative AI is transforming how criminals create scams, phishing attempts, and fraud schemes that are increasingly difficult to detect. To address these challenges, banks are adopting equally advanced, AI-driven solutions and collaborating globally to enhance their security frameworks and protect their customers.

Recognizing the need to stay ahead of these threats, CSAIL Alliances Affiliate Itaú Unibanco is turning to cutting-edge research institutions like MIT CSAIL as part as the organization's journey to understand how this technology is changing, discover new uses for generative AI, and ultimately keep their interests and clients safe.

ABOUT ITAÚ

Headquartered in São Paulo, Brazil, Itaú Unibanco is the largest banking institution in Latin America, with 70 million customers and presence in 18 countries, including over 3,000 branches. With a history spanning over 100 years, Itaú Unibanco has developed into a technology-focused bank, with strong central support for innovation and a mission centered around using new tools and techniques to improve the financial experience of their customers. Data Science Specialist at Itaú and Generative AI Researcher at MIT Sloan Sheila Dada explains that modernization is one of Itaú's top priorities, adding, "if there is an opportunity to improve things for the client, our strategy is always do it first."

Practically, one of the ways this strategy manifests is by engaging with academic research. Dada says, **"we at Itaú truly believe that we need to stay alert with everything that's going on, and being in partnership with top universities is one way of doing it."** Viewing tech as a strategic resource, Itaú is highly motivated to have "the right tech stack" and be a first mover in areas like generative AI. This way of thinking made MIT an obvious candidate for collaboration, and when Itaú began to look around campus for ways to engage, they found CSAIL Alliances and haven't looked back.

ENGAGING WITH CSAIL: GENERATIVE AI FOR FRAUD DETECTION AND MORE

Dada says that Itaú was "very focused on the abilities of generative AI" when she first became involved with the CSAIL Alliances relationship, particularly how generative AI will impact fraud and fraud detection. Brazilian banks are, she explains, "a world benchmark for fraud detection," with countries around the world looking to them for the latest strategies and ideas. Therefore, Itaú researchers have to think deeply to stay ahead in this rapidly changing area.

Working with Client Relations Manager Philip Arsenault, Itaú reached out to the CSAIL community to seek out researchers who could help them deepen their knowledge and explore the cutting edge of generative AI technology. The collaboration began with an initial project led by MIT researcher Amar Gupta. This initial project was focused on what LLMs can do to improve financial services. It showed how the relationship between Itaú and Dr. Gupta could be mutually beneficial. Building on that success, Itaú has now granted Dr. Gupta a significantly large contract to specifically explore generative AI and fraud.

Dr. Gupta is aware of the double-edged sword of generative AI enhancement, explaining that as LLMs improve, so does their capacity to enhance criminal activity. "The biggest problem is staying ahead of it," he says. To address the challenge set forth by Itaú, Dr. Gupta set up four teams to "look at different options," an example of the parallel work approach he uses with students and postdocs. These projects are exploring questions like using generative AI for phishing detection, user profile and network analysis, addressing class imbalance in fraud detection, and detecting fraudulent activity with irregular biometric data, such as voice. Taken together, these projects aim to elevate the state of the art of fraud detection for Itaú and, more broadly, for the financial services industry.

For his part, Dr. Gupta has enjoyed working with his colleagues in Brazil, saying, "overall I've found them to be very interesting, resourceful, and practical," adding that the Brazilians he's worked with in the past have implemented his suggestions and applied his research in the field. He also appreciates their collaborative attitude and willingness to financially support theoretical and applied research. Dada agrees, highlighting the value of their relationship and the insights provided by Dr. Gupta and the other researchers they've worked with.

More broadly, Dada appreciates what CSAIL Alliances offers, both in terms of the relationship with Dr. Gupta but also access to the broader CSAIL ecosystem. "CSAIL is good for us because of the platform CSAIL has for all employees," Dada says of the CSAIL Alliances website. **"Considering that we, Itaú Unibanco, are a big company, it's very good to have one platform so everybody has access to the benefits that CSAIL can provide."** Furthermore, she is grateful for how inviting the CSAIL community has been to Itaú's questions, explaining, "CSAIL is very open to us. When we are thinking about our research, there is always a professor who wants to talk to us and understand our problems." Of the CSAIL Alliances team, Dada adds, "It's not just the technical benefits but also the relationship that's important to us. Our relationship with Philip [Arsenault] is amazing. He's always there when we need him." This personal approach creates a win-win situation in which Itaú feels supported and excited to tackle big challenges.

LOOKING AHEAD: SUSTAINABLE RELATIONSHIPS AND FORWARD THINKING

Considering the positive momentum so far, Dada says that Itaú is now looking to create a sustainable, long-term relationship with CSAIL and the broader academic world. There's a phrase in Brazil called "chicken flight," which refers to the way projects can start and stop, lifting off briefly before coming back to the ground and needing to start all over. Itaú aspires to avoid this by balancing short term gains and excitement with long-term thinking to ensure they're consistently tuned into in the next generation of technology. Practically, this means getting the most out of the MIT ecosystem and thinking of ways they can do more with CSAIL and the research happening on campus.

As a bank, Itaú is embracing the changes modernization brings, shifting their marketing, branding, and culture with a more future-focused tone. Since the bank started, their motto has been that they build everything with the customer, but, Dada explains, that has become a given. "So now it's time to think how can we improve our customer's financial experience in a way that even he or she hasn't thought about." To do this, they'll need to deeply understand each client, comprehend their financial needs, and provide personalized support, something generative AI is sure to help with.

This area of research is personally important for Dada, a data scientist by training, because she believes generative AI provides the potential and the means to apply data for the greater good. "It's through data science that you understand what's going on: what the client needs, how you leverage them financially speaking, and how you protect them from a very bad scenario. Every day it's easier to really understand each individual and really help and understand their root problems in the financial space." Banks are most successful when the population they serve is financially healthy, Dada points out, and she hopes the technology they're exploring can bring about a more stable, equal world where "everybody has the same chances."

By harnessing the innovative power of places like MIT CSAIL, Itaú is working to improve the financial landscape for their customers, their industry, and the world.