MACHINE LEARNING IN BUSINESS

AI technologies such as machine learning and computer vision have launched new business models for a big-brand bank and an iconic manufacturer

Machine learning is proving its power across virtually every industry in ways that add actionable insight and efficiency. But one can look at the rise of this transformative paradigm with a more focused lens to see AI technologies as a business tool of the highest order, one that improves processes and inspires new models. AI, in other words, has a big role to play on the balance sheet.

Two leading brands in very different spaces — Capital One in financial services, John Deere in agriculture — are seeing efforts that stretch back decades come to fruition with the launch of cloud-based AI platforms. Capital One is developing digital products and experiences using machine learning to help millions of customers with their financial lives; John Deere's Precision Agriculture solution helps farmers gain precise information about their machines and crops. In both instances, AI and a cloud platform combine to enable transformation.

How are these two brands realizing gains through the application business?

MACHINE LEARNING DEEPENS THE CUSTOMER EXPERIENCE IN FINANCIAL SERVICES

Rob Alexander was drawn to Capital One's information-based strategy back in 1998 when he was scouting for an opportunity that fit his unique skill set. He has a degree in physics and an MBA, both from Harvard. "The analytical mindset — the appreciation for data and the power of data and analytics to help people with their financial lives — is the founding principle of Capital One," Alexander says, "and it's how we think about our business."

Machine learning finds patterns. In 2011, Alexander and the leadership at Capital One saw the traction that digital channels were getting among customers and realized the important role they were going to play in the financial services industry. "We needed a technology delivery model that was suited to how the world was changing and how consumer needs were changing," he says "We needed a faster cycle time on developing new products and capabilities that kind of fits with the digital age."

Machine learning was the foundation of the bank's strategy to build a transformative experience for the customer, by definition a path toward a wholesale reworking of its business model. To get there, the bank had to rethink how its products and services could be delivered to customers, starting with the bread-and-butter aspects of the banking relationship — fraud detection, credit risk, cybersecurity. Improving these areas involves distinguishing patterns, something the neural networks underlying machine learning accomplish far better than traditional, non-AI software. The goals: Approve as many transactions as possible by identifying fraud only when it's very likely to happen; make better decision making around credit risk; track constantly evolving threats. Says Alexander, "Applying machine learning in these areas is a big opportunity."

One recent innovation noted by Alexander is a spending tool called Second Look, which uses machine learning to alert customers about unusual spending patterns, such as double charges, a repeating charge that is higher than the previous month, or a tip that's higher than the

norm. According to Alexander, Second Look has saved customers millions of dollars in unwanted charges.

NATURAL LANGUAGE PROCESSING BRINGS HUMANITY.

Another opportunity to push the bank's business forward lies in natural language processing, which uses machine learning techniques to interpret written and spoken language. Alexander and his teams saw NLP as a way for Capital One to integrate itself into its customers' lives. The bank launched a text-based intelligent assistant called Eno and a voice experience running on Amazon's Alexa platform. "We believe banking should be more integrated into customers' lives and meet them in a way that is accurate, relevant and timely," Alexander says. "We wanted to create a distinct personality that could interact with customers. Our goal is to bring greater humanity and simplicity to banking."

THE CLOUD IS SPEED.

Capital One began its journey to the cloud in 2015, when the bank started migrating applications from its own data centers. The company declared itself a cloud-first organization, meaning that all new development will be on the cloud and legacy apps will be migrated to the cloud, a process that is reducing its data center footprint and speeding up iterative processes. "We think we can control our environment better as a cloud-first organization," Alexander says. "We can move with speed and agility and flexibility and, as cloud infrastructure evolves, we can evolve with it. It enables us to be better at building software and applications, and data products and data solutions that enable us to serve our customers better. The cloud journey has been really critical to our transformation."

MACHINE LEARNING YIELDS PRECISION IN AGRICULTURE

In quite a literal sense, John Deere has been cutting edge from its very beginning, when its namesake founder innovated and produced the first self-scouring plow in 1837. That device sliced into the earth and eliminated the need to clean the blade every few steps, a staggering leap in efficiency that opened up unproductive land much faster. Today John Deere has a precision agriculture platform running on AI in the cloud, an equally staggering leap in technology. "Machine learning will allow us to bring even more productivity to farmers around the world," says John May, president of agricultural solutions and CIO at John Deere. "AI will allow farmers to make decisions on the spot as they go through the field. So it's a huge savings for our customers."

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MACHINE LEARNING BREEDS BETTER DECISIONS.

Just what is life like in the field? A farmer's world is full of planning and decisions on a long list of variables. Over the course of every year, they are asking themselves what seeds to use, how to space seeds and how deep in the ground they should be to maximize yield. They have to think of all the factors that optimize a complex farming machine. "We're building out an ecosystem — an operations center — where we're pushing data from the machines directly to the cloud," May says. "Now the farmer can share that data

with any trusted advisor — an agronomist, for example — to make better decisions on whatever production step they're in. It's also storing the data so the customer can use it in the future. A farmer could have multiple combines and visualize data on any web-enabled device."

COMPUTER VISION SEES SAVINGS.

Sight is a crucial feature of the platform and a technology that John Deere has focused on over the past decades, as it developed self-driving capabilities for its suite of machines, from combines to seeders. May explains that machine learning in combination with computer vision can replace the eyes of the grower. As a sprayer goes through the field, for example, it differentiates between a weed and a plant — and distinguishes a healthy plant from an unhealthy plant using data captured in milliseconds with computer vision. The company reports huge savings for customers, who can eliminate up to 90% of what previous technology cost because, quite simply, they are spraying only 10% of the herbicide they did in the past. "Farmers can pick every single kernel off those cobs," May says, "and they're doing it in a way that produces the highest-quality grain."

THE FUTURE

Alexander of Capital One believes the increasing power of machine learning to help leaders make better decisions, with better context, will give brands an endless opportunity to give each customer a personalized experience. May of John Deere describes the direction the business is taking, from managing a field or a section of a field today to managing and maximizing the yield of every individual plant. "We believe that precision ag is a critical step, or a critical strategy, to unlock that value and productivity for the customer," May says. "AI will take productivity to a level we haven't seen in agriculture, one where you're making sure that a plant — whether soybean, corn, cotton or any other crop — has an environment that allows it to grow to its fullest potential."

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