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Everyone Is Talking About Data Science. Here's How J.P. Morgan Is Putting It Into Practice.

J.P. Morgan Asset Management is building machine learning and predictive analytics tools for its fundamental portfolio managers. Just don't call them quants.

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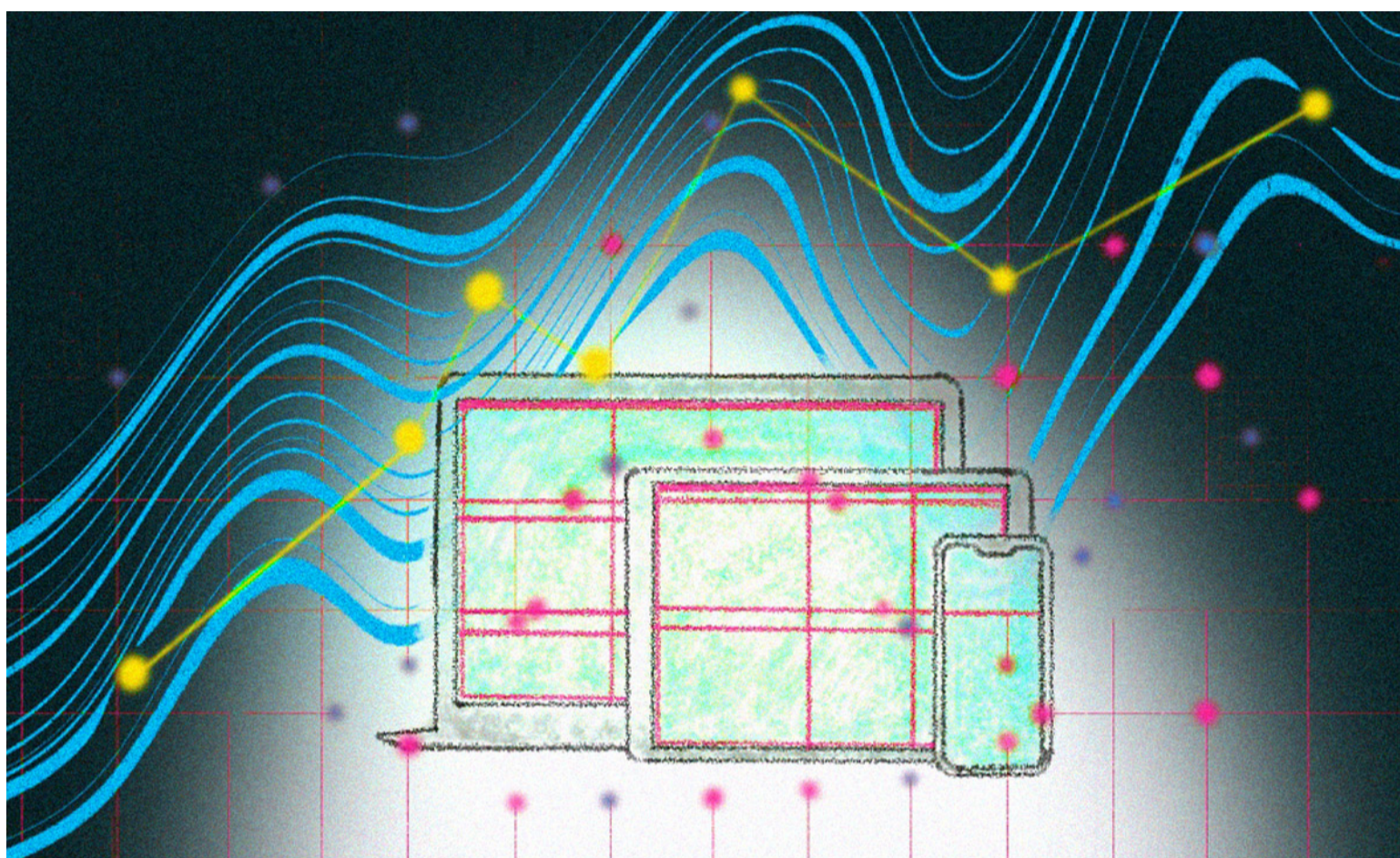


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Paul Quinsee, J.P. Morgan Asset Management's global head of equities, thought he knew the skills that turned analysts into stars. Like the talent scouts in *Money Ball*, Michael Lewis's bestselling book on how data science changed baseball, Quinsee had been watching fundamental research analysts play their game — albeit in less dusty fields — for almost four decades.

When Kristian West, head of JPMAM's investment platform and the former global head of equity trading and equity data science, came back to him with the results of a predictive analysis of years of collected research notes, Quinsee was surprised. He may have been less stubborn than the scouts portrayed in *Money Ball* when they heard what the data "thought" it took to win a game, but the characteristics of the firm's "superforecasters" weren't all intuitive.

In addition to personality tests of the analysts, West's machine learning model "read" years of stored notes, which, among other things, included the analyst's views, how often they

met with companies, the types of models they used, and their complexity.

West and his team found that the best forecasters wrote shorter research notes — and more of them. They saw companies more often, their models were simpler, and the tone and the language of their notes were extreme. And contrary to the stereotype of the former football player/Wall Street analyst, these superforecasters didn't play team sports.

Although quants like D.E. Shaw and Renaissance Technologies live and breathe data and advanced computing techniques, many traditional firms are still in the early stages of developing proprietary tools for their portfolio managers, who make decisions based on fundamental factors like the financial potential of a new product, the visionary qualities of a company's management, or a company's ability to survive a global pandemic. "You've either got quant or fundamental. What we're trying to do is bring the two together," West said. "We pride ourselves on our insights as fundamental analysts, but how do you actually observe that?"

Managers are at different stages when it comes to working with and assessing the potential of artificial intelligence capabilities and data. As one example, [Wellington Management's 70-person Investment Science Group](#) has been focused on applying data analytics to investment ideas and developing professional investors, which includes uncovering and mitigating the downside of their behavioral biases.

It's also expensive to equip fundamental portfolio managers with artificial intelligence and data science tools and platforms. Although the industry is competing with Alphabet and other technology companies for talented developers and programmers, surveys show that most asset managers believe it's critical for performance and risk management. Earlier this year, consulting firm Accenture found that asset [managers that had "industrialized and centralized" artificial intelligence techniques](#) across their investment platform were getting a significant bump in risk-adjusted returns.

JPMAM created a data science team more than three years ago, but West redirected the team to focus on four projects. The first is environmental, social, and governance information, where, despite the hype, there is still little data. The team is working to "fill in the gaps" in corporate reporting on environmental, sustainability, employee satisfaction, and other issues. The second project involves using linguistics and natural language processing to screen internal and external documents to create predictive insights, while the third is focused on giving portfolio managers access to aggregated retail and business data from parent bank J.P. Morgan. PMs can see the information on a dashboard in Spectrum, the firm's technology platform, and can create models and cohorts, such as one that might examine the spending habits of millennials.

The fourth piece is concerned with applied data science and money ball — essentially, investments and alternative data research.

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JPMAM has spent \$400 million over the last three years on this sweeping project, although that figure includes technology development for the broker relationship management team, equity trading (including trading analytics), and the derivatives team.

In some ways, JPMAM's machine-learning fund, called the U.S. Applied Data Science Value fund, gives a bird's-eye view of the firm's framework. Imagine a fund that uses a model that mimics what an investor would do. The model "reads" internal and external research, looks at trading and other data, and then makes stock recommendations.

Hamilton Reiner, portfolio manager and head of U.S. equity derivatives, said when thinking about a data science fund, "you automatically think it's quant. But no, this is a fundamental investment. But we can consume hundreds of thousands of data points to [inform] that fundamental lens."

Eric Moreau, who moved from the data science team to be a portfolio manager on the fund, said when investors hear data science they often think the fund is analyzing data that no one else has seen to help identify securities. "And we're always on the lookout for new data sets, but the way we think about data science is to identify hidden relationships, help size our positions, [and] control for tail risks in portfolio construction. That's the use of data beyond picking the right securities."

Data science has helped general managers in baseball identify the range of skills, beyond great hitters and base runners, needed to win a game. In investing, Reiner said data science has helped him think beyond security selection. "I thought my entire career that it's about great stock pickers. You hear about stock pickers of the year, but you never hear about the portfolio construction [person] of the year," he said.

The firm deliberately built the model to be fully transparent. Machine-learning applications, which are essentially computer programs that learn and adapt as they process data, can be inexplicable. The apps learn as they encounter more data. Many institutional investors, however, need to explain the decision-making behind their investments to boards, trustees, donors, and others. JPMAM programmed its ML model to be able to articulate at every level why decisions were made, so that the firm could explain its decisions to customers and regulators. "With ML models, they tend to be quite dark. We consciously designed and structured [ours so that] it explains itself," said West.

But West said the product is less of a focus for the firm than the ML framework behind it. For example, everyone in the firm can use the platform to receive alerts about changes that could affect fund holdings or themes. "That framework is important to all of us, especially in the fundamental investing space," he said. "There may be a theme that a particular PM or team is concerned about. You can then model that theme so [that] if a security [appears] to be straying into [it], you can be alerted." While quants do this all the time, it's particularly

important for fundamental managers, he said.

Much of West's work hinged on the work that [George Gatch, CEO of the asset management division](#), did in 2018 to redefine JPMAM's technology strategy and infrastructure. West had used AI and data science to overhaul equity trading, but the asset manager still built applications in a vertically integrated way, which meant that developers might build an expensive app that increased returns for the value team, while another tech group would find a data source that was helping to generate profitable ideas in fixed income. Unfortunately, the two pieces of tech sat in their own worlds.

Early in 2021, after Mike Camacho, head of the investment platform, became CEO of J.P. Morgan Wealth Management Solutions, Gatch called West and asked him to spearhead an overhaul of the technology infrastructure, which includes research, the development of investment ideas, portfolio construction (essentially, putting all of the ideas into the portfolio), and trading. West had already overhauled the trading strategy, which included integrating new techniques. Using one global order management system and one global machine-learning model, 53 percent of all trades this year involved automated orders, the vast majority driven by a machine-learning model. West remembers the reaction from Mary Erdoes, who is CEO of asset and wealth management, including the private bank, and Gatch, who asked, 'Can we replicate that across the front office?'

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