

NEXT ERA IN HUMAN-MACHINE PARTNERSHIPS IN FINANCE

Dispatches from a Bot Operator

This brief is one of a four-part series in which we take a deeper dive into the impact that human-machine partnerships will have in four industries over the next 15 years: entertainment and media, health care, financial services, and manufacturing. For a more detailed explanation on human-machine partnerships, please download the full report, *The Next Era of Human-Machine Partnerships*, [here](#).

Emerging technologies, such as Robotics, Artificial Intelligence (AI) and Machine Learning, Virtual Reality (VR) and Augmented Reality (AR), and Cloud Computing, stand to reshape how many of us live and work over the next two decades. They will upend the way in which we coordinate our daily lives, learn new skills, make personal and professional decisions, and take care of ourselves and others. They will also alter the way we keep track of the financial details of these interactions.

As described in the full report, *The Next Era of Human-Machine Partnerships*, the most transformative role that today's emerging technologies will have over the next decade, will be in underpinning the formation of new human-machine partnerships. These partnerships will enable us to better analyze and communicate resource management decisions.

While these partnerships will make their way into every facet of our lives, as with all transformations, the full impact of human-machine partnerships will vary across geographies and industries. Finance may be particularly open to increased human-machine partnerships. Already, machines drive most of the transactions in stock markets. Moving forward, the emergence of technologies like distributed-ledger blockchain systems, machine intelligence, and automated financial purchasing promise to further transform this space.

So, what does the next era of human-machine teams mean for finance by 2030? How might these emerging technologies influence the way we track financial information and account for resources? Can the fusion of human and machine intelligence help to increase the security of our financial infrastructure?

This brief offers a first-person view of how the next era of human-machine collaborations and co-dependencies may reshape how we administer financial systems. This foresight vignette is not intended to be a prediction of future behavior. Rather, its objective is to provoke us to think creatively about the future possibilities-and potential pitfalls-generated by the next era of human-machine partnerships.



Dispatches from a Bot Operator | 2030



Pankaj Wadhwa
Age: 35 in 2030

Mathematics was the only constant thing in Pankaj's life. He easily excelled in the subject, tackling more advanced formulas than other kids his age. For him, numbers were the one thing that made sense of the world.

At university, Pankaj studied Computational Finance, and after graduation, he took a job at a large financial institution. Given the trends in automation and machine learning, many of Pankaj's professors warned him to avoid the field, fearing that there would not be stable jobs in the future. Algorithmic-run systems were already beginning to perform a number of tasks previously done by humans, including financial reporting and trading. However, Pankaj found the dynamics of liabilities and the different degrees of risk too alluring to resist.

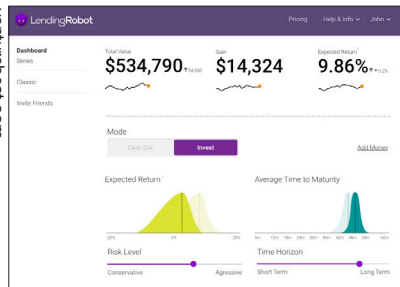
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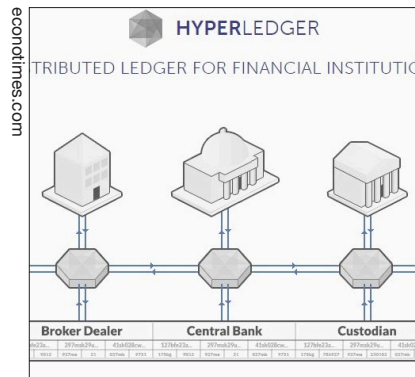
venturebeat.com



Seattle-based financial technology startup **LendingRobot** offers investors a hedge fund that uses algorithms to automatically buy and sell assets on behalf of its clients without the need for human investment advisors.

Within months of starting his new job, news broke that China's biggest e-commerce firm had adopted a new foundational blockchain system managed mostly by advanced Machine Learning. Implementing this system increased the firm's clientele three-fold, gaining three hundred million clients in addition to their original one hundred million in just three years by systematically finding and deploying marketing tailored precisely to each individual customer.

Signal of Change



Hyperledger is an open source collaborative effort created to advance cross-industry blockchain use. The project seeks to establish a common distributed ledger technology that lets Finance companies use software to drive their transactions with one another.

Now 35 years old, with a decade of industry experience under his belt, Pankaj is amazed at how different the industry is in 2030. Financial AI systems routinely purchase and manage their own financial products, cutting time, costs, and security concerns with each transaction. Self-driving cars, for example, automatically search the markets for the optimal insurance policies, performing real-time analysis of all the relevant information pertaining to individual trips and risks. Similarly, home security systems now rationally increase their own coverage against theft autonomously when a neighborhood experiences an increase in crime rates.

Signal of Change

thezebra.com



Metromile is an auto insurance company that offers “pay-per-mile insurance” using a device that plugs into a car’s on-board diagnostic port and collects mileage data.

Not only has the industry been transformed, but people’s experience of working within financial services has fundamentally changed. A decade prior, many pundits expected humans in finance would be entirely replaced by software. This didn’t quite play out as expected. As smart systems integrated into the workplace, it increasingly became clear that digital systems and their human co-workers could do more together than they ever could apart.

Pankaj’s colleagues jokingly accuse him of “melding” with his computer so he can benefit from the financial knowledge of the system. In a sense, they are right. The digital system that works alongside Pankaj constantly observes all the human traders in an attempt to better mimic the professional tricks it has not yet mastered. At the same time, Pankaj watches the system’s activities, because, while the system is undeniably brilliant, there is something radically novel about its way of thinking. The system does not always apply human logic, so Pankaj often reverse engineers its actions to identify the underlying reasoning behind them. He’s building a tight relationship with the systems and, as a result, he and it perform better.

Beyond bots as co-workers, Pankaj could remember a time when his boss was an actual person and not just an AI avatar. Now, his supervisor is a bot, affectionately referred to as “Aiden the AI” around the office. Aiden tracks Pankaj’s daily workload and uses data analysis to make decisions about which projects are the best fit for Pankaj and his coworkers.

Signal of Change

businessinsider.com



According to Founder Ray Dalio, **Bridgewater Associates**, the world’s largest hedge fund, is building an artificial intelligence engine to automate the management of the company.¹

Above all, management across the company is evidence-based. The combination of human intuition and digital analysis is harnessed to run a constant series of comparative tests to determine the benefits of one option compared to another. Looking back, it is hard to believe how careless decision makers once were with resources.

Not everyone is happy with an automated manager, but Pankaj prefers the data-driven management system to a human boss. Then again, numbers, for him, make sense of the world. In his mind, this is just the next step in improving productivity and organizational efficiency.

Endnote

1. “World’s largest hedge fund to replace managers with artificial intelligence” in *The Guardian* (December 22, 2016) <https://www.theguardian.com/technology/2016/dec/22/bridgewater-associates-ai-artificial-intelligence-management>

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