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Trust an algorithm with your business? - Technology - International Herald Tribune

By Douglas Heingartner

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AMSTERDAM — Do you think your high-paid managers really know best? A Dutch sociology professor has doubts.

The professor, Chris Snijders of the Eindhoven University of Technology, has been studying the routine decisions that managers make and is convinced that computer models, by and large, can do it better. He even issued a challenge late last year to any company willing to pit its humans against his algorithms.

"As long as you have some history and some quantifiable data from past experiences," Snijders said, a simple formula will soon outperform a professional's decision-making skills.

"It's not just pie in the sky," Snijders said. "I have the data to support this."

Some of his experiments from the past two years have looked at the results that purchasing managers at more than 300 organizations got when they placed orders for computer equipment and software. Computer models given the same

tasks consistently achieved better results in categories like timeliness of delivery, adherence to the budget, accuracy of specifications and compatibility with existing systems.

No company has directly taken Snijders up on his challenge. But a Dutch insurer, Interpolis, whose legal aid department has been expanding rapidly in recent years, called in Snijders to evaluate a computer model it had designed to automate the routing of new cases, a job previously handled by the department's own legal staff.

The manager in charge of the project, Ludo Smulders, said the model was much faster and more accurate than the old system.

"We're very satisfied about the results it's given our organization," he said. "That doesn't mean there are no daily problems, but the problems are much smaller than when the humans did it by hand. And it lets them concentrate more on giving legal advice, which is what their job is."

But Snijders does not consider this a genuine test of man versus model.

"This wasn't really a challenge," he said, "since they were already convinced of the model's superiority and just wanted to have this confirmed."

Snijders's work builds on something researchers have known for decades: that mathematical models generally make more accurate predictions than humans do. Studies over the years have shown that models can better predict, for example, the success or failure of a business start-up, the likelihood of recidivism and parole violation, and performance in graduate school.

They also do better than humans at making various medical diagnoses, picking the winning dogs at the racetrack and competing in online auctions.

Computer-based decision-making has also grown increasingly popular in credit scoring, the insurance industry and some corners of Wall Street.

The main reason for computers' edge is their consistency, or rather humans' inconsistency, in applying their knowledge.

"People have a misplaced faith in the power of judgment and expertise," said Greg Forsythe, a senior vice president at Schwab Equity Ratings, which uses computer models to evaluate stocks.

The algorithms behind so-called quant funds, Forsythe said, act with "much greater depth of data than the human mind can."

"They can encapsulate experience that managers may not have," he said.

And critically, models do not get emotional.

"Unemotional is very important in the financial world," he said. "When money is involved, people get emotional."

Many putative managerial qualities, like experience and intuition, may in fact be largely illusory. In Snijders's experiments, for example, not only do the machines generally do better than the managers, but some managers perform worse over time as they develop bad habits that go uncorrected from lack of feedback.

"There's no evidence whatsoever that I know of that shows more senior managers make better decisions," Snijders said. "Experience has really shown to be relatively worthless when it comes to making more accurate decisions."

Other cherished decision aids, like meeting in person and poring over dossiers, are of equally dubious value when it comes to making more accurate choices, some studies have found, with face-to-face interviews actually degrading the quality of an eventual decision.

"People's overconfidence in their ability to read someone in a half-an- hour interview is quite astounding," said Michael Bishop, an associate professor of philosophy at Northern Illinois University who studies the social implications of these models.

And the effects can be serious.

"Models will do much better in predicting violence than will parole officers, and in that case, not using them leads to a more dangerous society," he said. "But people really don't believe that the models are as accurate as they are."

Models have other advantages beyond their accuracy and consistency.

They allow an organization to codify and centralize its hard-won knowledge in a concrete and easily transferable form, so it stays put when the experts move on. Models also can teach newcomers, in part by explaining the individual steps that lead to a given choice. They are also faster than people, are immune to fatigue and give the human experts more time to work on other tasks beyond the current scope of machines.

Not everyone is convinced that managers are incorrigibly myopic.

"I've never seen any evidence that there is a pattern of decline at all, and it just doesn't fit with the way management literature is going, which is all around the emotional intelligence angle," said Laura Empson, the director of the Clifford Chance Center of the Said Business School at Oxford University.

"I think there are a lot of people who have a strong technological orientation who would agree life would be a lot simpler if it weren't for the humans," she said. "But the reality is, organizations do have a lot of very intense and complicated human issues within them."

Many in the field of computer-assisted decision-making still refer to the debacle of Long-Term Capital Management, a high-flying hedge fund whose founders included several Nobel laureates. Its algorithms initially mastered the obscure worlds of arbitrage and derivatives with remarkable skill, until the devaluation of the Russian ruble in 1998 sent the fund into a tailspin.

"As long as the underlying conditions were in order, the computer model was almost like a money machine," said Roger Pielke Jr., a professor of environmental studies at the University of Colorado whose work focuses on the relation between science and decision- making. "But when the assumptions that went into the creation of those models were violated, it led to a huge loss of money, and the potential collapse of the global financial system."

In such cases, "you can never hope to capture all of the contingencies or variables inside of a computer model," he said. "Humans can make big mistakes also," he said, "but humans, unlike computer models, have the ability to recognize when something isn't quite right."