other social media, Wang notes. "No one will be able to collect at the same scale that I am doing," he says. Wang is confident that he can get samples and data from one million people in five years, which in turn will lead to a more informed AI.

His plans are driven by frustration with genomics. The largest genomic studies offer only subtle hints about an individual's susceptibility to disease — such as pinpointing a gene that makes an individual only one or two per cent more likely to develop heart disease. So, in addition to mining its customer's genomes, the iCarbonX alliance will scour biological molecules from various tissues to provide a more accurate and actionable picture of someone's health. Wang chose alliance members for their promise in mining such signals.

SomaLogic of Boulder, Colorado, for example, has a chip that can measure some 4,200 proteins simultaneously. In June, researchers using a commercially available precursor that reads 1,130 proteins were able to predict which subset of heart-attack patients would have a recurrence by measuring the activity of nine blood proteins (P. Ganz *et al. J. Am. Med. Assoc.* **315,** 2532–2541; 2016).

Another alliance member, HealthTell of San Ramon, California, makes a chip that uses microarrays of some 330,000 protein fragments to fish antibodies from a blood sample to answer questions about disease progress, allergies and vaccine effectiveness (J. B. Legutki *et al. Nature Commun.* **5,** 4785; 2014). And another, PatientsLikeMe of Cambridge, Massachusetts, asks its 500,000 or so users to upload to a website less-clear-cut data about pain levels, sleep and fatigue. These are combined with medical data, behaviour patterns and the users' experiences of diseases and drugs to find patterns that predict such 'immeasurables'.

"He sucks you in with a vision of what can be, and then he makes it happen."

The end result will be an unwieldy set of data from various sources, which is why Wang and a team at iCarbonX are developing algorithms to understand how these variables correlate with healthy or diseased states. The Meum app enables users to enter their meals and activity levels, as well as any physiological or vital-sign data, and gives advice on what to eat, when to sleep and how active they should be.

Views are mixed about how well the venture will work. The alliance will provide iCarbonX with a collection of high-quality indicators that should reduce noise in the data and allow patterns to emerge, says Bernard Munos, a senior fellow at FasterCures, a drug-development advocacy organization in Washington DC. "This is very important given the number of variables they will be dealing with."

But he worries about the chaotic behaviour of some of the systems. Alliance member General Automation Lab Technologies of San Francisco, California, will provide personalized assessments of how microbes living on someone's body may affect their health. But the microbiome is poorly understood and in a constant state of flux, says Munos. "There is a lot of randomness in biology at the individual level that will be hard to capture, let alone model. I wish them well, but, at the moment, I am guarded as to their chance of success."

Others have faith in Wang. "There's no bullshit. He sucks you in with a vision of what can be, and then he makes it happen," says Larry Gold, founder and chairman of alliance member SomaLogic.

Wang is keenly aware that the success of the venture will depend on its users' readiness to submit data and heed the advice the app gives. He said during one of his many toasts during the summit: "Meum might tell me not to drink, but I don't have to listen." ■

ARTIFICIAL INTELLIGENCE

Google secretly tested AI bot

Updated version of Google DeepMind's AlphaGo program revealed as mystery online player.

BY ELIZABETH GIBNEY

A mystery player causing a stir in the world of the complex strategy game Go has been revealed as an updated version of AlphaGo, the artificial-intelligence (AI) program created by Google's London-based AI firm, DeepMind.

Known only by the name Master(P), the anonymous player has beaten the world's best at Go in a string of online games since late December, including defeating current world number one, 19-year-old Ke Jie.

Go is regarded as the most complex board game ever invented, and is famously difficult for computers to crack. But last year, AlphaGo showcased the strength of AI software when it stunned the Go world, first by defeating a professional human player, Fan Hui, and then by going on to beat one of the Go world's top players, Lee Sedol.

Fellow players had a hunch that Master(P) was probably also an AI program. It came out of nowhere to win dozens of consecutive quick-fire games across two separate online platforms. And on 4 January, Google DeepMind chief executive Demis Hassabis revealed on Twitter that Master(P) is a new prototype version of AlphaGo. The "unofficial" games were designed to test the prototype, he said: "We're excited by the results and also by what we and the Go community can learn from some of the innovative and successful moves played by the new version of AlphaGo."

Playing on the online servers Tygem and FoxGo, Master(P) played more than 50 games, winning them all — except perhaps for one game, which, according to some reports, was deemed a tie only because the network connection of the opponent, the Go professional Chen Yaoye, timed out. "It's extremely impressive whoever/whatever it is," said British Go player Jon Diamond ahead of the announcement. After losing to Master(P), Chinese professional Gu Li offered a reward of 100,000 yuan (US$14,400) to any human who could beat the mysterious player.

Although AlphaGo was rumoured to be behind the bot, many observers also suspected that another team had created an AI that could master the game, something that both Chinese and South Korean scientists have said they are attempting to do.

Hassabis said that the new version of AlphaGo would play official, full-length games later this year. How strong it will be in more high-profile tournaments remains unclear, because the rules of such matches differ from those of matches played in online forums.

Online games are usually played at a faster pace, which favours the computer over humans, says Rémi Coulom, a freelance developer of Go programs based in Lille, France. "But still, I expect a strong correlation with performance in serious slow tournament games," he adds.

AlphaGo has played only around a dozen public games, so Google DeepMind's decision to trial its latest version in the open will allow Go players to study more of its moves.

"I personally think it's fantastic that there are all these games for people to look at and study. There are lots of moves that are really new and surprising," says Niall Cardin, a UK-based Go player. ■