

Lunch with the FT: Demis Hassabis

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The DeepMind founder's aim is to make 'machines smart'. Over seafood dim sum, he talks about computers acting like humans, joining forces with Google, and why eating is time wasted

Before we have a chance to order any food, I ask Demis Hassabis whether his work will lead to the extinction of our species. Hakkasan Hanway Place, an upmarket Cantonese restaurant in the basement of a quiet side street in central London, seems an odd place to be worrying about the apocalypse. But the subject comes to mind because Hassabis is the man who, in the not-too-distant future, could bring about humanity's most powerful creation yet: artificial intelligence.

A modern polymath, the 38-year-old's career has already included spells as a child chess prodigy, master computer programmer, video games designer and neuroscientist. Four years ago, these experiences led him to start DeepMind, an AI company that, he says, has the aim of making "machines smart".

For some, this is a utopic idea — a world aided by super-smart digital assistants working to solve humanity's most pressing problems, from disease to climate change. Others warn of a grim Armageddon, with cognisant robots becoming all too aware of human limitations, then moving to crush their dumb creators without emotion.



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Hassabis, wearing a figure-hugging black top and dark-rimmed glasses, blends in at Hakkasan, where the decor is mostly black and the lighting minimal. He tells me he knows the place well — it's where he took executives from Google, during a series of meetings that led to the search giant paying £400m for his fledgling company a year ago. Google is betting Hassabis may be able to unlock the secrets of the mind.

"It's quite possible there are unique things about humans," he argues. "But, in terms of intelligence, it doesn't seem likely. With the brain, there isn't anything non-computable." In other words, the brain is a computer like any other and can, therefore, be recreated. Traits previously considered innate to humans — imagination, creativity, even consciousness — may just be the equivalent of software programs.

Perhaps the best way to understand DeepMind's work is to watch one of Hassabis's entertaining presentations on YouTube. There, you can see him showing off the AI system's technology and how it is able to play retro arcade games such as Space Invaders. At first, the machine pilot is hopeless but, after just a few hours, it is firing missiles to its targets with uncanny accuracy.

As the video illustrates, the machine learns, adapts, and then solves problems faster and better than any human. But Hassabis is not interested in creating a computer that's just good at computer games. His ambition is to create "general" AI systems that use "unstructured" information from their surroundings to make independent decisions and predictions. Just as humans do.

The uncertainty lies in whether these artificially intelligent beings will be motivated by a desire to guide and assist us or simply to do away with people like old gadgets that have served their purpose. Also on the YouTube video, Hassabis describes his AI computer playing a boxing game in which, after a few seconds of sparring, it corners the opponent and pummels them into submission. The audience laughs as Hassabis explains that the computer "ruthlessly exploits the weakness in the system it has found". But perhaps this is an apt analogy. As physicist Stephen Hawking wrote last year, AI would be "the biggest event in human history . . . unfortunately, it might also be the last."

Hassabis argues that we're getting ahead of ourselves. "It's very, very far in the future from the kinds of things we're currently dealing with, which is playing Pong on Atari," he says. "I think the next four, five, 10 years, we'll have a lot more information about what these systems do, what kind of computations they're creating, how to specify the right goals. At the moment, these are science fiction stories. Yes, there's no doubt that AI is going to be a hugely powerful technology. That's why I work on it. It has the power to provide incredible advances for humanity."

Too soon then, to be worrying about how to wage war with a sentient robot army? "In our research programme, there isn't anything that says 'program consciousness,'" he says, as a waitress appears. "Shall we order?"

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Hassabis chooses sweetcorn soup to start, and I opt for vegetarian hot and sour soup. For mains, he recommends the seafood dim sum platter, so I follow suit. He also orders a side of organic barbecue pork ribs as a side; I go for some sesame prawn toast. We both ask for jasmine green tea to accompany the meal.

Born to a Chinese-Singaporean mother and a father of Greek-Cypriot descent, Hassabis grew up in north London, close to where he currently resides with his wife and two children. By the age of 13, he was a chess master. Fascinated by games, he was a regular competitor at the Mind Sports Olympiad, whose organisers described him as "probably the best games player in history". When he grew tired of playing, he started to make games too. As a teenager, he helped design *Theme Park*, a cult video game that simulated the experience of creating an amusement park.

In 1994 he went to Cambridge university to study computer science but he was unconvinced by some of the teaching that focused on "narrow" AI, which relies on programmers to attach "labels" to data in order for a computer to make sense of information. "I remember distinctly one lecture, where I said to my friends around me, 'We shouldn't listen to this, they're brainwashing us.' I said that slightly too loud and the lecturer called me out and said, 'If you think you know everything, you shouldn't come here.'" Hassabis walked out of the lecture hall.

It was around this time he decided to create DeepMind, a research project-cum-tech start-up. Hassabis says that, even then, he was aware this was a 20-year plan. First, he would need to gather the experience necessary to found such a group and thus, in 1998, he set up a video games company, Elixir Studios, to begin his education in the business world. In 2005, he returned to academia, aged 28, to earn a PhD in cognitive neuroscience at University College London. His research focused on the hippocampus, the brain region crucial for navigation, memory recall and imagining future events.

He took this long route, he explains, because he wanted to learn the lessons of his heroes, such as Charles Babbage (1791-1871), the English genius who first conceptualised a programmable computer. "Babbage is one of the most tragic examples," says Hassabis. "He thought of computers a hundred years before [their time]. His machine worked but he never saw it built."

With the protection of Google, Hassabis seems likelier to avoid Babbage's fate. DeepMind has expanded to around 100 employees. Unlike many youthful start-ups, the average age of the group is in the mid-thirties. Typically, most of these workers have one or more PhDs. As a result, DeepMind's London offices are, he says, "a little more sophisticated" than Google's. There are no coders slumped on colourful beanbags, he says, just "serious sofas for serious thinking".

In a reference to Nasa's efforts to put men on the moon, Hassabis says he is trying to create an "Apollo programme" for AI, by creating an organisation stuffed with some of the greatest minds on earth. "In any normal start-up, just one of our senior researchers is someone you'd build a whole company around," he says.

But how does Hassabis lead a group of people like this? "You can't just say, 'I'm the CEO, so you do this.' You've got to lead by example and respect for your own work. It's not why I did a PhD... but to lead a team like this, I need academic qualities..." For once, he struggles to explain himself. You need credentials that are unimpeachable, I say? "Unimpeachable. That's the right word."

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The soup arrives. I wonder aloud whether his mission is more personal than he lets on. How much of it is an effort to understand his own exceptional mind?

Hakkasan Hanway Place

8 Hanway Place, London W1T 1HD

Sweetcorn soup £9.00

Vegetarian hot and sour soup £11.50

Dim sum platter x 2 £30.00

Sesame prawn toast £13.50

Organic pork ribs £13.50

Sorbet x 2 £10.00

Mineral water £4.60

Jasmine green tea £3.80

Total (inc service) £108.28

He leans down to the bowl, so the steam drifts in front of his face, lifts the spoon to his lips and sips carefully. Then he says: “If you take a kid who is fairly thoughtful and introspective, then train them professionally from the age of four to 13, playing adults and grandmasters at chess, they can’t help but think hard about what their brain is doing when coming up with these moves.

I realised a couple of years ago, that trying to build AI while trying to build a multibillion dollar company at the same time, was probably impossible

“You’re thinking about how to improve that mechanism because you’re trying to get better at chess. Chess is an extremely deliberative process. You’re consciously planning out everything, which is why it’s such a fascinating game. It really encourages me with my type of thinking and brain, to think very hard about what intelligence is.”

But, he says, unlike that of other chess masters, his attention was soon drawn to things away from the board. Aged eight, he bought a Spectrum computer with his winnings from chess tournaments and started programming. “I realised that this machine was an extension of the mind, in the way that cars allow us to move faster, planes allow us to fly. Computers allow to enhance our minds in the same way.”

He is also intrigued by how humans interact. For that reason, he likes playing poker and, perhaps unsurprisingly, has won thousands of dollars in professional tournaments. “A lot of chess players can’t handle poker,” he says. “In chess, if you play the right moves, you win. But life is more like poker than chess, in that there are unforeseen and unknown things in life you can’t cater for. We’re trying to build something that can expect the unexpected gracefully. That’s much more like poker.”

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Our next set of dishes arrives. The dim sum are piping hot, gorgeous balls of prawns, scallops and vegetables wrapped in rice flour. I attack them with my chopsticks, drowning them in soy sauce. Hassabis begins by picking up his pork ribs with his fingers and nibbling at the edges. Hakkasan is a Michelin-star restaurant but he complains that the process of eating is time wasted and would not mind if it involved no more than swallowing tubes of paste. “I like eating out as an experience,” he says, “But day-to-day eating? It would be good if there was something more efficient.” Out of politeness, I leave a couple of my dim sum untouched. Not as many, though, as Hassabis leaves behind.

I ask him why he chose to sell his company to Google. DeepMind had plenty of money in the bank, including funding from Peter Thiel, the first major backer of Facebook, and Elon Musk, who leads the commercial space flight group SpaceX. Hassabis says that, before joining Google, he pushed for a number of safeguards to ensure his group was “semi-autonomous” from its corporate paymasters. DeepMind remains in London, not Silicon Valley. It is also creating an ethics board — he is currently interviewing philosophers and experts, though won’t say who — which will govern how its technology can be used. It will, for example, rule out any military uses.

“All these technologies are neutral in themselves,” he says, “but it depends on how we use them. We need to make sure we understand how we use them and use them in the right way. I don’t want it to be neutral. I want it to be good.”

In the end, though, Hassabis has to report to Google’s executives. Surely staying independent would have ensured better control of his creation? “My plan wasn’t to sell the company,” he says. “I wanted to build a Google ourselves. I realised a couple of years ago, that trying to build AI while trying to build a multibillion dollar company at the same time, was probably impossible. I’d have to do one or the other. I care much more about the research.”

He continues: “Larry [Page, Google’s chief executive] persuaded me by saying, ‘Look, I’ve spent the past 15 years building Google. It was hard. There were a lot of things that had to happen, both lucky and skilful. Why don’t you take advantage of all that infrastructure and hard work and short-cut all of that, so you can concentrate on the mission?’ I thought about this a lot and didn’t have a good argument against that.”

The benefits for Google are clear. DeepMind’s technology will become incorporated into its products, says Hassabis, such as making sure it can better predict a person’s search results. It’s easy, too, to see the more sophisticated uses, from integrating AI into Google’s self-driving cars to providing the brains to the robotics under construction at “Google X”, the company’s advanced technologies arm.

Waiters whisk away our plates and, after some gentle persuasion, Hassabis agrees to order a dessert. He asks which sorbets are available, choosing pear and passion fruit. I go for the same.

Life is more like poker than chess, there are unforeseen things you can’t cater for.

What motivates him? Is it money? The Google deal reportedly netted Hassabis around £80m. He argues, convincingly, that being rich is of little concern. “It’s important to have money so it frees you to make the correct choices for your goals. But it should never be an end itself.”

We're trying to build something that can expect the unexpected, gracefully

Perhaps then, his legacy is what drives him? After all, if he becomes the father of artificial intelligence, Hassabis would be held in the same regard as the likes of Babbage, or another one of his heroes Alan Turing, the British cryptographer who designed the machine that broke the Nazi Enigma code.

He ponders this, a scoop of luminous green sorbet on his spoon. "You know how you asked me, when I played chess, is it important for me to win? It is massively important, from my own point of view of fulfilling my own potential. Legacy is important in that, one day, I will hope to have done something significant enough with my life, and with the technology, that will have made a profound change to society for good."

He is late for a meeting, so I ask for the bill. Before he leaves, I ask how long it will take to create general AI. When will Hassabis's lines of computer code, his algorithms, start writing their own lines of code, their own algorithms? He says that, just like humans and all life that came before, his AI is evolving. "We're building systems that are able to reconfigure themselves in new ways that we haven't preprogrammed. I don't know if you'd call that writing itself. It's more like how the brain works. Even this lunch conversation we're having. It's changing some synapses in both of our brains." He laughs, before adding: "Whether we like it or not."

Murad Ahmed is the FT's European technology correspondent

Illustration by Patrick Morgan

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