

Google's AI beats world Go champion in first of five matches

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In a landmark battle between man and artificial intelligence (AI), the world champion of the game Go was narrowly defeated by his computer opponent.

Google's DeepMind AlphaGo program beat South Korea's Lee Se-dol in the first of a series of games in Seoul.

In October 2015, **AlphaGo beat the European Go champion**, an achievement that was not expected for years.

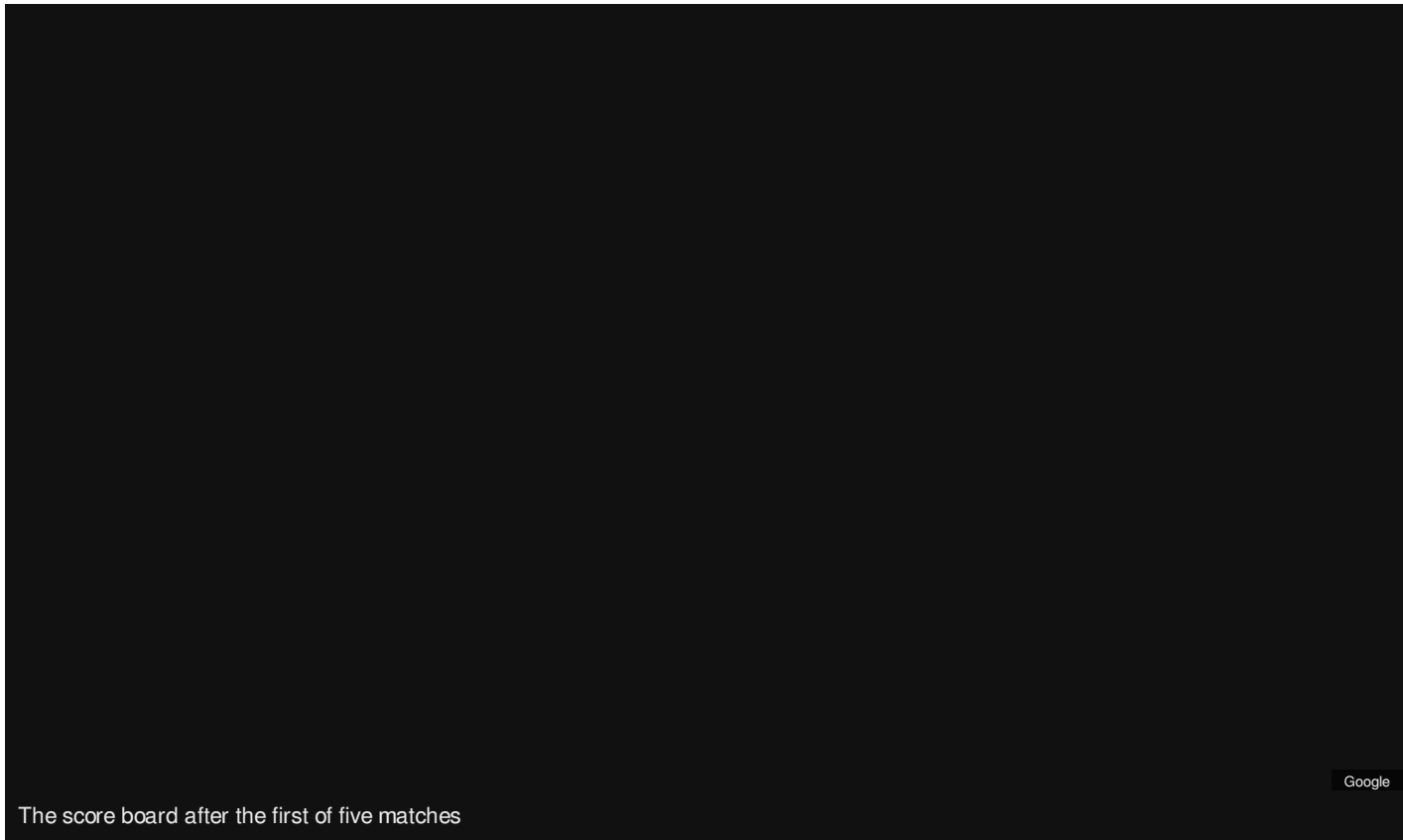
A computer has beaten the world chess champion, but the Chinese game Go is seen as significantly more complex.



The BBC's Stephen Evans in Seoul said Mr Lee appeared "nervous, sighing and shaking his head" at the outset of the match.

Throughout most of the game Mr Lee seemed to have the upper hand but in the last 20 minutes, AlphaGo took an unassailable lead. Mr Lee than forfeited, handing victory to his opponent.

The two sides will play a total of five games over the next five days for a prize of about \$1m (£700,000).

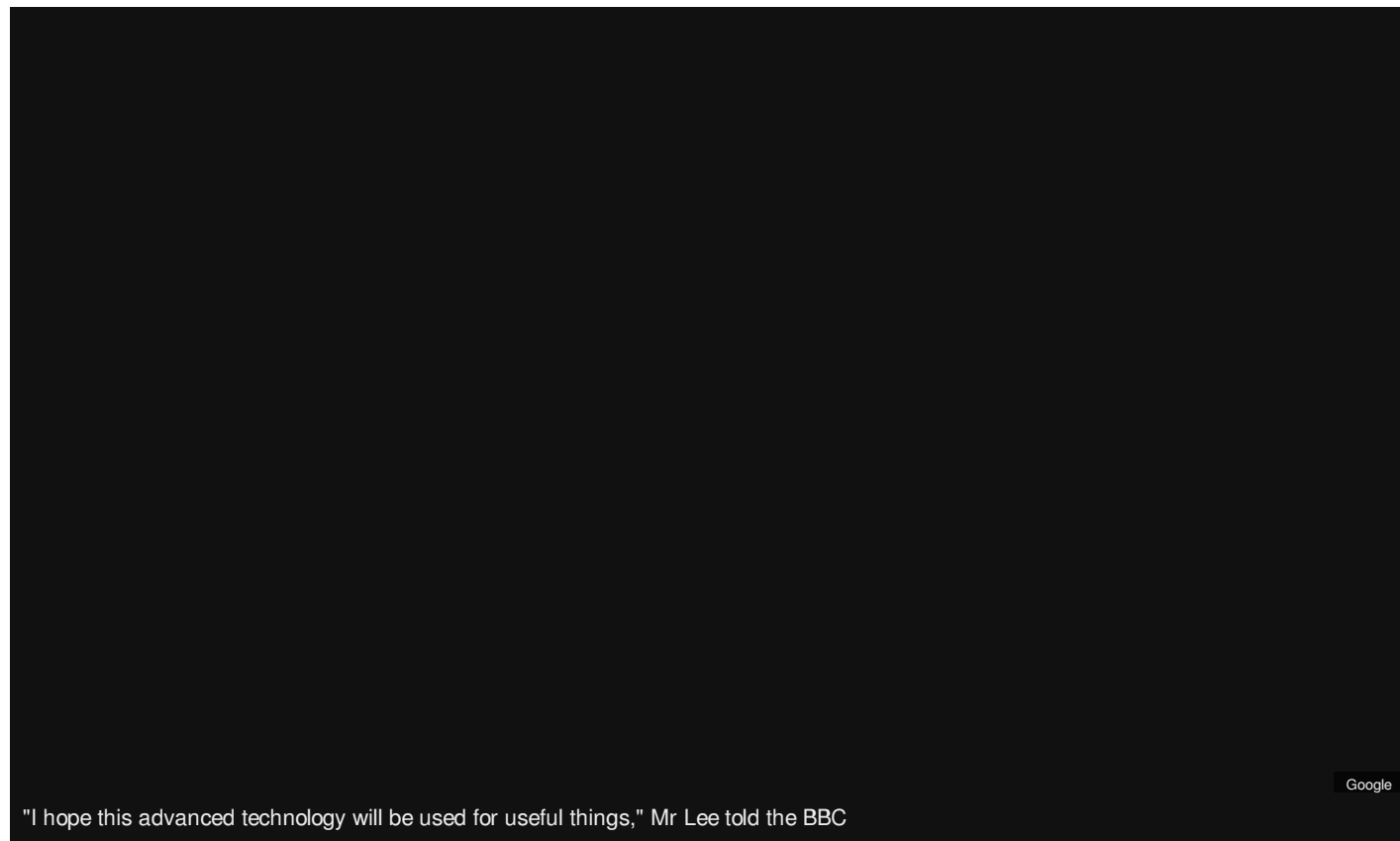


Algorithm vs intuition

The five-day battle is being seen as a major test of what scientists and engineers have achieved in the sphere of artificial intelligence.

Go is a 3,000-year old Chinese board game and is considered to be a lot more complex than chess where artificial intelligence scored its most famous victory to date when IBM's Deep Blue beat grandmaster Gary Kasparov in 1997.

But experts say Go presents an entirely different challenge because of the game's incomputable number of move options which means that the computer must be capable of human-like "intuition" to prevail.



"I hope this advanced technology will be used for useful things," Mr Lee told the BBC

"Playing against a machine is very different from an actual human opponent," Mr Lee told the BBC ahead of the match.

"Normally, you can sense your opponent's breathing, their energy. And lots of times you make decisions which are dependent on the physical reactions of the person you're playing against.

"With a machine, you can't do that."

What is Go?



Go is thought to date back to ancient China, several thousand years ago.

Using black-and-white stones on a grid, players gain the upper hand by surrounding their opponents pieces with their own.

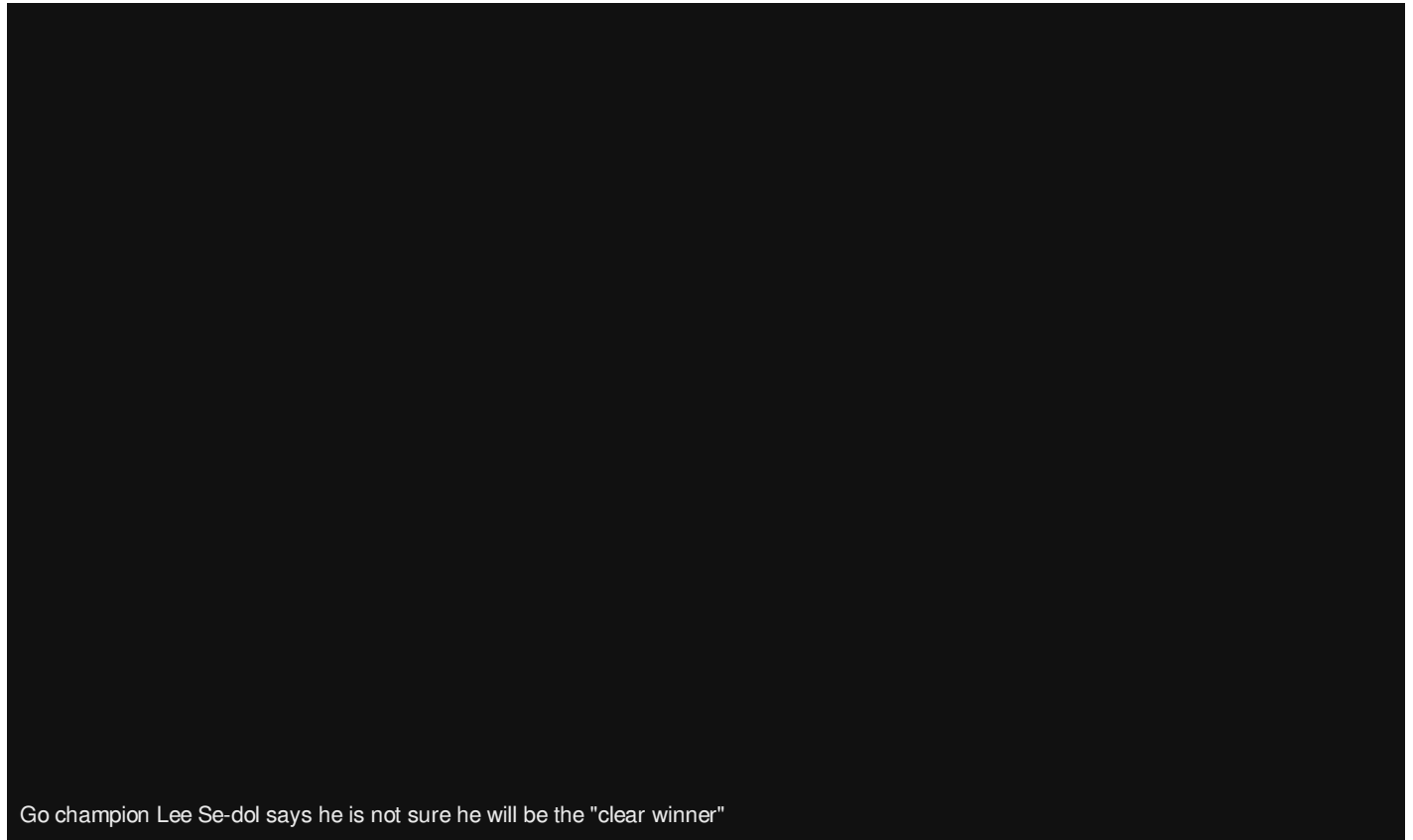
The rules are simpler than those of chess, but a player typically has a choice of 200 moves compared with about 20 in chess.

There are more possible positions in Go than atoms in the universe, according to DeepMind's team.

It can be very difficult to determine who is winning, and many of the top human players rely on instinct.

Learning from mistakes

Google's AlphaGo was developed by British computer company DeepMind which was bought by Google in 2014.



The computer program first studied common patterns that are repeated in past games, Demis Hassabis, DeepMind chief executive explained to the BBC.

"After it's learned that, it's got to reasonable standards by looking at professional games. It then played itself, different versions of itself millions and millions of times and each time get incrementally slightly better - it learns from its mistakes"

Learning and improving from its own matchplay experience means the super computer is now even stronger than when it beat the European champion late last year.



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