This movie is about a team of researchers developing a neural network to play the Chinese board game go; a task described as impossible for the current technology to solve and perhaps impossible for it to ever solve. After lots of training, AlphaGO invited Fan Hui a 2-dan professional and the European champion to come in and play against the AI. Fan Hui believed it would be an easy win since no human had ever lost to an AI in Go before; however, the AlphaGo AI was much better and ended up winning all three games. Even with the initial wins, some undescribed weaknesses were discovered and the AlphaGo team ended up bringing Fan Hui into the team to help train the network and resolve some of the obvious mistakes the network was making. Hearing about the loss and most likely some kind of finical deal, the AlphaGo team got Lee Sedol, a 9-dan professional and the world champion to play in a best out of five tournament against the network. Lee Sedol was overwhelmingly confident in interviews before these games, saying he was on a higher level than Fan Hui and would win 5-0 or maybe 4-1. In reality, the network with more training from the team and help from Fan Hui ended up defeating Lee Sedol by the same 4-1 ratio he predicted winning by. The interesting part of the results isn't the AI winning but rather what can be learned about the game in retrospect. In game two, the network made a shoulder move that the commentators and professionals stated was a bad move adapt Go players would never make. However, it was that move that led to AlphaGo winning that match. Similarly, in game five, the team thought AlphaGo made bad predictions and was playing random moves; however, it ended up winning the match using what experts currently consider bad moves. While these moves are analyzed as poor, it is important to note that Lee Sedol didn't lose due to stress or bad play in fact he won game four with a move calculated to be played at 10,000 to 1 odds, with Lee Sedol stating it was the only move.

What does this documentary teach us about AI. One obvious takeaway is how artificial intelligence can teach us new things even though humans are the ones to teach it. The summary stated that Lee Sedol adjusted his play style and learned from playing against the network. I think it was also short-sighted for there not to be an analysis of Fan Hui. The summary stated that he won the European championship; however, he already held this title before ever playing against the network. Seeing as Fan Hui probably played against the Network hundreds of times as it was adjusted for play against Lee Sedol, who is the world champion, and the network won. It would be interesting to know if Fan Hui's rating increased from 2-dan and by how much if it did go up.

This film also shows human determination as Lee Sedol played all five games even though he lost the tournament after game three. Human adaptability is also somewhat evident through game four as Sedol adjusted his play style until winning a game, even if it was through making a low-chance move the network didn't plan for and couldn't recover from. This documentary also shows humanity's arrogance as basically everyone was stating the network couldn't beat Lee Sedol because it didn't have human intuition. However, Computers are way better at pattern recognition and the network could play thousands of games against the equivalent of top-tier players it seems a bit ridiculous thinking there was no possibility of a computer winning. The documentary also touches on distrust of computers with depictions of networks as the terminator when Ais are a lot closer related to a smart washer. This shows the human nature to be distrustful of what they don't understand.

AI in protein folding is trying to figure out what shape each protein makes. Predicting structure also helps understand what the function of a protein is. DeepMind has developed AlphaFold2, which can predict shapes with 92% accuracy across all targets and scores 87% in the free modeling category. The real-world impact is this technology can help develop more effective drugs and possibly find the root cause of genetic diseases where the cause is currently unknown.

 The status of AI in GPT-3 is less clear here since it doesn't have the same dedicated page on DeepMind like AI in protein folding has. However, it is a language processor, and some trials ran into issues of race and gender stereotypes. And it is powering Gopher and Gopher cite, which are language processing tools that can answer questions. The real-world benefit is more efficient searches; instead of asking a question and seeing a bunch of links, it can just give you the direct answer and the source from which it got the info. Language processors have also been implemented on websites to help users find correct pages or FAQ from the site's home page. In fact you may have unknowingly used this tool on a webpage as the API for this network is publicly available as of November 2021.