

## HOW ARTIFICIAL INTELLIGENCE CAN READ OUR MIND

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### Abstract

*The article describes how artificial intelligence can read our minds. Principles of functioning of neural networks are presented. It sheds new light on the advantages of using Artificial intelligence in predicting human actions.*

### Keywords

Artificial intelligence; AI; machine learning; neural network; deep learning.

The puzzle of thinking is one of the most fascinating riddles in the world, because thinking is what makes a person a person. It not only separates people from animals (which also have a certain degree of thinking), but also forms the basis of our individuality. Many philosopher problems have argued for centuries, acquired it (and some have disappeared) in artificial intelligence [1].

People are good in many respects: many of us are infected with a thirst for pioneering, know how to play chess and solve complex political issues. However, we still leave some questions for the disposal of computers. Even more: almost all mechanical calculations are performed by computers. But they do not have a soul, consciousness and free will. It is over this decision - on how to pass a Turing test - and scientists in the field of artificial intelligence work. Artificial intelligence, given the enormous capabilities of electronic computers, could cope with a number of critical tasks, as well as solve complex issues of a global order, from world peace to the colonization of distant galaxies. But what if AI can read what we are thinking about and predict our actions?

Today, one of the most complex and frightening crimes are serial killings. And in the twentieth century, their number has increased very much, and some serial maniacs have not been found so far. But soon the police will come to the aid of artificial intelligence, which has already managed to solve one riddle [2].

To search for serial killers will use the algorithm CARMEL, which was able to decipher the mysterious manuscript 105-page manuscript of the XVIII century. As the publication Next Web writes, AI will work on a long-known scheme: in order to catch a criminal - you need to think like a criminal. The algorithm must understand the course of the reasoning of a person and "break his thoughts" in order to calculate a person by the "handwriting" of his crime.

Now the algorithm is being taught on the materials of already disclosed cases, the archive of which has been kept since the 1960s. One of the main things that AI learns is the story of the Zodiac killer. He killed people in the north of California and around San Francisco. In addition to the nickname, nothing is known about the murderer until now. He himself chose such a pseudonym, which he indicated in the notes sent to the editorial board of local newspapers. In addition, 4 cryptograms were also found in the envelopes, in which the killer encrypted information about himself. The police managed to decipher only one of them.

Now CARMEL is sorting through the biographies and correspondence of hundreds of thousands of people, comparing them with 340-character zodiac cryptograms.

Nowadays everyone who, somehow, is connected with technologies already know that ransomware has been disastrous for businesses and individuals alike, with recent attacks like WannaCry costing companies millions, and personal attacks threatening private data. We're all at risk. Criminals are holding data and information hostage using tools that require almost no skill, and once they have your files it's too late to react [3].

Empow is a security startup, just patented a 'mind-reading' approach to cyber-security in order to try and discover these attacks the moment they start. CEO and Founder Avi Chesla says today in a press release:

*The innovative technology behind the patent enables a human security expert to understand actual the intentions of any attacker. This “mind reading” is accomplished initially by data gathering – we read the data generated by a variety of tools inside the organization – which is then enriched by Internet data sources which yield more signals and cues. These are harvested from good guys and bad. On top of that we apply of NLP algorithms to draw definitive conclusions about what the attacker is after. No one signal lets us read the attackers’ mind, but we connected the dots to generate intention.*

The AI uses all the data it can gather to determine what an attack might look like, specific to the system it is protecting, and constantly monitors everything happening on the entire network. When it doesn’t have enough data from internal sources, it begins searching outside of your network for information that fills in the gaps.

It learns to understand what suspicious behavior looks like at the moment it starts. This allows it to react within the first couple of seconds of an attack with a solution tailored to best defend your network and data. The AI is like a guard dog that comes well-trained and never stops learning how to do a better job of guarding your assets.

It’s getting easier to hack networks or compromise accounts and harder to secure them. There’s an arms race going on between criminals and computer systems that requires improvement in leaps that go beyond virus definition updates and malware protection.

Empow’s patented mind-reading AI won’t tell you what you’re thinking, but if it brings bigger guns in the fight against cyber-attacks it’ll be far more important than a crystal ball.

Another invention that comes with thoughts “this could change everything” AI story of the year comes to us in the form of AI that’s supposed to read minds. This time however, there’s no parlor trick. We’re one step closer to being able to broadcast our thoughts to a screen, thanks to artificial intelligence [4].

Japanese scientists have created AI capable of reading a person’s brainwaves and displaying an image based on what they’re looking at. If a person is staring at a picture of the letter “A” the AI will successfully create an image that resembles a fuzzy version of that. It’s actually reading the person’s mind – sort of.

The scientists published their paper “Deep image reconstruction from human brain activity” wherein they state:

*Here, we present a novel approach, named deep image reconstruction, to visualize perceptual content from human brain activity.*

Over a 10 week period the scientists showed images to human test subjects and recorded their brainwaves. At times the subjects brains were monitored in real-time while they were looking at the images, other times they were asked to “recall” the images. The researchers used the brain scans to train a deep learning network to “decode” the data and visualize what the person was thinking about.

When these machines are learning to “read our minds” they’re doing it the exact same way human psychics do: by guessing. If you think of the letter “A” the computer doesn’t actually know what you’re thinking, it just knows what the brainwaves look like when you’re thinking it.

It visualizes your thoughts by guessing what output we want to see based on the data from our brains — unlike human “psychics” whose guesses are based on, we’ll just say: less scientific data.

AI is able to do a lot of guessing though — so far the field’s greatest trick has been to give AI the ability to ask and answer its own questions at mind-boggling speed.

The machine takes all the information it has – brainwaves in this case – and turns it into an image. It does this over and over until (without seeing the same image as the human, obviously) it can somewhat recreate that image.

For now, it’s obviously not perfect – but it’s almost certain to be a use-case for the field of deep learning that sees extensive development.

That’s when things get interesting.

One day technology like this may turn our minds into projectors or allow us to share streaming footage of our actual dreams with one another. It’s difficult to imagine the ramifications of a technology that could make our brains the penultimate computer input device.

This could enable understanding without communication: the ability for humans to gain knowledge from machines or other humans instantly.

It could also destroy the idea of privacy, ruin poker forever, and start World War III, but that’s a different article.

## REFERENCES

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