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Quantum Computing

Reading 14

Quantum Machine Learning

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Abstract

In this text, that is based on the paper: "Quantum Machine Learning" by Jacob Biamonte et al, two ideas are extracted arbitrarily and discussed, according to the interest of the author.

1 Idea 1

Quantum Machine Learning as a tool

Machine learning is nothing but a tool. Even when there are polemic thoughts about its usage, we can compare machine learning to a bow. You can use the bow to hunt and get food, or you can use it to kill your own kin, the thing is what do you use a tool for. Another instance is a screwdriver, you can just use it as it is intended or you can use it to harm someone. In that sense, machine learning in general does not harm in a inherent way, but it can be used to cause a major harm in society, to represent this, just look to the cases of Cambridge Analytica, where machine learning algorithms were used in very dark ways.

When we develop quantum machine learning algorithms, the threats might become bigger than those that pose traditional machine learning techniques, since quantum algorithms appear to be so good at breaking encryption, and encryption is such an important part of our economy, because practically all of the payments, or important messages we are delivering, are encoded using cryptography.

2 Idea 2

The quest of Artificial General Intelligence

The quest for Artificial General Intelligence is a topic that fascinates a lot of computer scientists and that is very relevant in today's state of the art work. Last year Turing award Laureates were decided because they worked with neural networks and they set the basis to work in Artificial General Intelligence.

In this complex field, a lot of disciplines converge, like neurosciences and computer science. They are constantly looking for new models that can better represent our brains and they ask deep questions like what is consciousness and causality. From this point of view, quantum computing can give a fresh view on the topic of causality and fundamentalism, while also providing a whole new model of computation that might suit better the necessities of what we know intelligence.