AI is Surging: Are We Ready for the Fallout? (Part 1 of 3)

This is the first article in a series on the legal issues surrounding artificial intelligence (AI), based on an fbtTECH webinar held in November 2017.

Part 1 – AI is Surging: Are We Ready for the Fallout?
Part 2 – Artificial Intelligence and Data Privacy: Are We Sufficiently Protected?
Part 3 – You Can't Sue a Robot: Are Existing Tort Theories Ready for Artificial Intelligence?

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Categories:

Blogs
Publications
Technology Blog

There has been a lot of publicity, angst and hype about the brave new world of artificial intelligence (AI) and how it may be affecting businesses, and for that matter, all of us. Every day we hear more and more about AI and what it can do, and the danger and benefits it portends.

The Evolution of Artificial Intelligence

When we talk about AI, what we are technically talking about are machine learning algorithms that can assist, and sometimes even replace, human decision-making in everything from medical diagnoses to investment strategy, to building design. The uses are growing every day. One of the more creative recent uses is a new chatbot called "Do Not Pay," which uses automated questions and then takes the human responses that enable you to contest parking tickets.

The growing use of AI has also become a frequent subject of debate between such luminaries as Elon Musk and Stephen Hawking, who believe that AI could cause serious disruption and even start a war. Hawking went so far as to say, "the development of full AI could spell the end of the human race." This group believes strong national and international oversight of AI is required.

On the other side of the argument are folks like Mark Zuckerberg, CEO of Facebook, who stresses the benefits of AI in areas such as

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medicine and self-driving cars. Zuckerberg believes AI is and ultimately will be a boon to society. Those on the Zuckerberg side of the argument are quick to point out that AI is called AI only because it's not well understood. Once it's understood, you realize it's really just software.

In thinking about AI within the context of this debate, it's important to see just how quickly it has evolved and progressed: From the 1940s, when Alan Turing helped crack the enigma machine (the Nazi encryption device which at the time was considered unbreakable) to January 2016 when AI took another significant step forward with "Deep Mind," a system developed by Google and which beat the world's best player in the highly complex game "Go." So, we are really looking at about only 75 years of progression. When you compare this to flight, for example, which took some 400 years to evolve from Leonardo DaVinci's first drawings to the Wright Brothers flying machine, you get a sense for how quickly AI has developed.

Advancing and Refining AI Capabilities

AI advancements are now happening faster and are considerably more impactful. Why? Under Moore's law, the computational and microchip powers continue to roughly double every year. We also have more and more data to use to assist in the machine learning of computers.

Given this rapid advancement, it's important to understand exactly what AI can do. AI has been called the branch of computer science that tries to give computers human-like abilities, such as learning, speech, vision and language. Looking at these one at a time we get a better idea where AI is and what its potential might be:

Learning

Traditional computers had to be programmed to do specific tasks. They were given very specific instructions on how to accomplish those tasks. Now we are programming machines to learn how to do different tasks they were not specifically programmed to do.

Speech

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Siri, Google Voice, Amazon's Echo, Cortana – all these systems use AI and artificial neural networks to respond orally to our voices and then act based on what they have heard. The voice recognition technology has gotten so good that the error rate is small, particularly once the machine learns your voice and inflection.

Vision

AI has also become good at seeing an image and understanding what is portrayed. The programs can now view an image and translate what that image shows into understandable words, sentences and concepts.

Language

Finally, and perhaps most importantly, AI has advanced in understanding language: traditionally, computers could look at a sentence only as a collection of independent words, but could not pick up meaning or context. This enabled computers to undertake standard word searches, but little more. Now computers can understand language in ways more like humans. Instead of humans having to understand and speak the computer's language to make a computer do specific things, now computers speak and understand our language. Ease of use increases dramatically. An example of this newer ability is the automatic grammar correction and word choice tools in Microsoft Word.

This also means that the vast amount of unstructured data – data not in computerized format – now is searchable and understandable to a computer. This is important because the amount of data has grown exponentially. Almost 90% of the data that ever existed was created on the past two years, and most of it is unstructured. And the internet of things, your car, your home, etc., are all creating more and more data that computers can understand, learn from and act upon.

The reason we hear so much about AI now is the rapid advancements in all of these areas – learning, speech, vision and language – and it is sparking the debates, fears and promises.

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AI Limitations

It's important to keep in mind the limitations of AI: it requires lots of (quality) data and learning. A common problem arises when the data set is not sufficiently robust and AI creates a model that agrees with the data, but has no predictive value. For example, although AI may determine there are more orange cars involved in accidents than cars of any other color, that does not mean orange cars *cause* accidents. Such a false deduction is called "overfitting," and points to one weakness with artificial intelligence.

The best results have always been when AI and humans are working together, a combination that always gives better results than the human or AI acting alone. We are not yet at the age of Blade Runner or the Terminator no matter what you have read.

Against this background, we will explore the privacy and security implications of the use of AI in consumer products in the next edition of this series.

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