What Are Cognitive Technologies All About?

Bloomberg TV: You are developing and working with solutions and products based on something very interesting: semantic technologies. But let's first look at the broader picture and talk a little bit about cognitive technologies. What effects do they have and how did you begin developing such technologies?

Atanas Kiryakov: Cognitive technology has been fashioned as a term for all things that generally refer to Artificial Intelligence, except maybe for robots. My understanding has always been that the cognitive part relates more to psychology. The name comes from the so-called deep learning – a domain that has been making remarkable progress in the last 5-10 years.

Bloomberg TV: What is the application of such technology?

Atanas Kiryakov: Well, there are various applications of cognitive technologies. The most obvious is text analysis – something Ontotext has been doing for a long time. Other applications connected to machine learning are speech recognition or image and video analysis. In other words, this is an analytical software for recognizing things the way we, humans, recognize them. These capabilities can be used in various scenarios. They can be applied even for participation in conversations or the so-called chatbots, although chatbots as an example belong more to other technologies. But in general, these are tasks that allow machines to understand what something like an image is about the way we do. There are, of course, other less fancy applications such as media monitoring or any other activity related to Big Data processing.

Democratizing the Use of Technologies

Bloomberg TV: These technologies are adopted by more and more businesses. What do you think will lead to implementing them on an even larger scale?

Atanas Kiryakov: The thing that has changed is that these technologies have become commoditized. In other words, they have become much more accessible and easy to implement as web services. Up until recently such systems like an image analysis system, for instance, werenвЋ™t available to everyone. Typically, an image analysis system would cost a

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few million dollars and even for an organization that could afford its cost, its implementation would take several years. But, at the moment, you can create an account in any of the several big cloud services providers and get access to image recognition services at a very low price. For example, the image recognition of 1000 photos may cost you $3. Or maybe even $1 because currently there is a price war going on between Microsoft, Google, IBM and Amazon.

Bloomberg TV: How do all these things lead to changes in business models and business behavior?

Atanas Kiryakov: Well, the major shift is about who has access and who can afford these technologies. As I said, before only large organizations could justify investing in such technology, which cost them millions. At the moment, for example, if the administration in my kids' school chooses to have more comprehensive video control, and reduce costs from live security services, they can contract a programmer to set up an application that analyzes the videos from the CCTV cameras by sending fragments to a cloud service. The whole project will take less than a month and the budget will be affordable even for a small school.

ItвЂ™s All about Intelligent Information Processing

Bloomberg TV: What you are saying is that now there are more opportunities for everyone?
Atanas Kiryakov: Yes, the conclusion is obvious. Now, these technologies can reach more people. Ultimately, smarter applications are created and information such as text, videos and pictures is processed more intelligently.

Bloomberg TV: Speaking more broadly of Artificial Intelligence, do you think it can lead to large-scale improvement of the human intellect and of people, in general?

Atanas Kiryakov: Well, it could, if it does more of the routine tasks we face every day such as reading the news or checking our mail, we will have more time for other things. Another helpful aspect is if, for example, you are a knowledge worker or a journalist and you need to do some research, these technologies can make your job much easier. There are many services such as news archives that can get you the news on a certain topic – for example, the latest 10000 news related to subject X and subject Y that have been published in the past 5 years. Another cloud service can process the results in whatever way you require. And then

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a third service can visualize your data. So, where before it would have taken lots of planning, resources and so on, now you will be able to complete such a project in a day, which would otherwise be impossible.

Bloomberg TV: What are the most widespread uses of these cognitive technologies?

Atanas Kiryakov: At some point, we got all these large volumes of data and we got stuck in making some sense out of these data. Shallow analytics and brute-force involvement of lots of computing power solve only part of it. Cognitive technologies came to help us make deeper insights from data. Looking at the larger picture, cognitive technologies are the next logical step after Big Data. Share on X

The most obvious applications here (apart from the way Mr. Trump used them and the whole topic of fake news) involve marketers and manufacturers who are now able to analyze everything related to their customersвЂ™ behavior. And this is one of the biggest drives behind the development of these technologies.

Privacy and Cognitive Technologies

Bloomberg TV: People have concerns that cognitive technology can violate their privacy. Do you think such concerns can get in the way of the broader use of such technologies?
Atanas Kiryakov: No.

Bloomberg TV: The shortest answer is: No?

Atanas Kiryakov: The shortest answer is: No. Of course, there are cases where it does happen. For example, there is this story about a father of a high-school girl complaining to a store manager that they shouldnвЂ™t send her coupons and advertisements for baby goods. But later, it turned out that their daughter was pregnant. The parents didnвЂ™t know it, but the store where their daughter did her shopping knew it, through analysis of her shopping list. In recent years, they also analyze behavior on Facebook or the store's cameras and what aisle a customer frequents or what products she looks at, etc. There always will be cases like this, where these technologies violate our personal space. But in general, I donвЂ™t think this is something we need to be concerned about.

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Bloomberg TV: So, we should rather focus on the benefits of these technologies?

Atanas Kiryakov: It seems that we live in times when people trust technologies a lot, they trust the Internet and their computers a lot and thatвЂ™s why they occasionally suffer from viruses, as we have seen last week (ref. #wannacry). But I believe that the payoffs of trusting and benefiting are greater than those of paranoia and being closed. I donвЂ™t really see a reason for a strong reaction here.

There are a lot of companies, especially in the US, whose main business model is to collect information, including personal information, and then sell it. They canвЂ™t make a profit from anything else so, at the end of the day, they make a profit by selling the data for their customers to people like the company who did TrumpвЂ™s campaign. They buy information from such providers and then analyze it to target individual people with the вЂњrightвЂќ messages.

Bloomberg TV: In conclusion, let's talk about disruptive technologies. They can lead to many new opportunities, but they can also close many doors. Are these mundane tasks that you were talking about the thing that in the future we can delegate more and more to machines?
Atanas Kiryakov: Absolutely, in India and not only there, there are companies consisting of thousands of people who handle information manually (for example, in different languages or different types information such as scientific, commercial, etc.). I donвЂ™t expect much of the labor of these people to become superfluous. It will only get to the next level where these people, with the help of technologies, will start providing better quality services instead of just the basic coding of texts. In the process of analyzing information, there is a wide range between highlighting a text manually and the many other things you can do with its content. So, I donвЂ™t think that the need for information processing will decrease.

Bloomberg TV: Can you think of any unexpected domains other than politics that can benefit from cognitive technologies?

Atanas Kiryakov: Cognitive technologies are entering the field of security in many ways. And it is obvious that all this information that is widely available to the public, will begin to serve the police. By the way, last month OntotextвЂ™s technology was selected for such a project for the Spanish Police. Also, there will be more and more gadgets that will make our

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life easier by adapting to our individual preferences.

Bloomberg TV: B Where does Bulgaria fit into this picture of the technological world?

Atanas Kiryakov: Well, I can talk more about the IT industry. I think most of the Bulgarian companies are still operating in the segments with low added value. We are still providing more engineering and brain power instead of inventing and selling products.

What I hope, and to some extent I am beginning to see, is that with a little more investment and a long-term vision, there are more and more companies that are leaders in something new, rather than just outsourcing human intelligence.

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