

Researcher proposes social emotions test for artificial intelligence

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New evidence from brain studies, including cognitive psychology and neurophysiology research, shows that the emotional assessment of every object, subject, action or event plays an important role in human mental processes. And that means that if we want to create human-like artificial intelligence, we must make it emotionally responsive. But how do we know that such intelligence actually experiences real, human-like emotions?

The Annual International Conference on Biologically Inspired Cognitive Architectures - BICA-2016 in New York brought together scientists from around the world and focused on biologically inspired cognitive architectures as one of the approaches to creating artificial intelligence. Its main focus was on reproducing the principles and mechanisms of human thought in a computer. The event was attended by Alexei Samsonovich, a professor in the Cybernetics Department at the Moscow Engineering Physics Institute (MEPhI) National Research Nuclear University and the General Chair of the Conference, where he presented his current research.

Alexei Samsonovich has proposed an artificial intelligence test based on a relatively simple computer game. The program and a human both manipulate virtual people on a computer display, thus interacting with each other. The game involves actions with emotional content: A player may strike or push aside his co-player, or say "hello" and step aside to make way for him, or help him move off a stone or get out of a trap. The players thus engage in different types of social relationships, including

mutual trust, subordination and leadership.

The Turing test assesses whether a co-player is a machine or a human. In Samsonovich's proposal, the idea is that the machine should have an emotional advantage over the average human player, which will manifest itself in the players' wish to rescue the machine first. Moreover, multiple behavioral parameters of the player and the machine will be calculated during the game, characterizing the inner worlds of both participants. For the machine, those parameters should, in the future, become statistically identical to human behavior.

Similar tasks are being tackled by other research teams. Jonathan Gratch of the Institute of Creative Technologies at the University of Southern California has invented virtual characters capable of identifying and expressing emotions while communicating with humans in their natural language, grasping the inner logic of emotional responses and generating emotions depending on the situation. The machine can even deceive a human, if necessary, to achieve the desired result. This technology is used fairly widely, from encouraging students to study harder to diagnosing mental disorders. Gratch's model does not allow for social emotion ties between communicators. Nor does it have to, for that matter. The impressive effect is achieved through statistically adjusting the parameters of the AI in each particular case. It is not about re-creating human consciousness inside a computer.

But that's precisely what Samsonovich seeks to accomplish – creating the equivalent of human consciousness. His artificial intelligence test is just a small part of a far bigger scientific challenge: to build an artificial brain that reproduces the principles and mechanisms of emotional awareness in humans, a brain that would pass the emotion test and be accepted by humans as capable of experiencing emotions, commiserating and providing moral support in difficult situations.

"Virtual agents and robots should be human-like so that humans could trust them and cooperate with them as with their equals. Therefore, artificial intelligence must be socially and emotionally responsive and able to think and learn like humans. And that implies such mechanisms as narrative thinking, autonomous goal setting, creative reinterpreting, active learning, and the ability to generate emotions and maintain interpersonal relationships," Dr. Samsonovich said.

He believes that [artificial intelligence](#) based on those principles will be a technological breakthrough that will completely change all spheres of human life.

Over the next 18 months, the researcher from the Institute of Cyber Intelligence Systems in MEPhI hopes to create a virtual being capable of drawing up plans, setting goals and establishing lasting [social relationships](#) with humans. Named Virtual Actor, it will hopefully possess both emotional and narrative intelligence and understand the context of events and what turns they could take.

Provided by National Research Nuclear University

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