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Robots in search of lost time

Giving robots a sense of time can help them integrate into human activities and societies

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The term 'robot' was first used by the Czech writer Karel Capek in 1920. 'Rossum's Universal Robots' describes human-like artificial entities created to work for humans and make their lives easier. Since then, robots or androids have inspired countless fictional stories.

Today, robots are moving more and more into the real world, increasingly adopted in many areas of daily life from factories to public spaces and in our homes. But these robots do not match the image of advanced humanoids as described in works of fiction. The question is how far are we from this scenario where artificial agents are fully integrated into human societies?

The TimeStorm project (http://timestorm.eu/ ↗) funded by the EU Future and Emerging Technologies (FET) programme, researched how to equip artificial systems with human-like cognitive skills, such as perception, attention or decision-making. The aim is to go further than current systems, which are usually prepared to accomplish repetitive tasks, and instead change the way that artificial agents understand and interact with the world.

To develop cognitive skills for artificial intelligence, TimeStorm has focused on time, not as a parameter that can be measured, but as a dimension that is appreciated by human beings. As stated by project coordinators Panos Trahanias and Michail Maniadakis from The Foundation for Research and Technology Hellas, "the sense of time is an essential capacity of humans, with a major role in many of the cognitive processes expressed in our daily lives."

Indeed, scientists have been able to study the key role time plays in multiple aspects

of cognition such as decision-making, action planning, memory storage and recall. TimeStorm researchers say the inability of robots to perceive the flow of time hinders their integration into the real world, where nearly all human social and behavioural activities have strong time-dependent characteristics.

More specifically, the project studied, among other topics, how human emotional states affect the perception of time. For example, when a person is stressed due to heavy workloads, waiting times for a train or a meal to be served appear much longer than when a person is relaxed and content. Hence, the project aims to give robots the ability to prioritise activities according to the emotional state of the interacting human – known as the 'Daisy Planner', rather than apply a classic 'shortest job first planner'.

To test this new form of planning, a sample group of different couples were put in stressful situations with stringent deadlines. The robots were tasked with assisting these couples in preparing them a meal. The robots were able to gauge which person from each couple was more stressed and prioritise the preparation of the meals accordingly, highlighting the potential for robots to help those in more urgent need of assistance.

The passing of time is ever present in our lives and can often be a cause of anxiety in stressful situations. Artificial intelligence endowed with a sense of time will enable robots to better communicate in human terms, helping them to not only carry out evermore intricate tasks, but also developing a more human-like sense of which tasks to prioritise. Robots more in tune with human actions and emotions could lead to improved quality of life in many areas of human society.

Link to story on fetfx.eu: http://www.fetfx.eu/story/robots-search-lost-time/ ⬀

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