

Towards Better Robot Manipulation: Improvement through Interaction

Results in Brief



Robots to learn from experience

Three new robotic technology strategies to help improve robots' capabilities have been successfully developed to operate on two different robot platforms. The findings bode well for improving robot accuracy and efficiency.



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Robotics are important for advancing industry and supporting a number of diverse applications, from helping the physically challenged to assisting in search and rescue operations. The EU-funded [ITHRUI](#) (Towards better robot manipulation: Improvement through interaction) project examined how learning can be exploited to upgrade robot manipulation.

Robots generally come out of the box with modest built-in knowledge to perform manipulation tasks in the human environment. The project team sought to go a step further by enhancing an out-of-the-box robot's learning ability. Specifically, it aimed to advance the robot's capabilities through its interactions over its lifetime, with very little user intervention required. The team also looked at how robots can improve their

little user intervention required. The team also looked at how robots can improve their capabilities through simple forms of communicative behaviour such as gaze and pointing that can enable them to 'manipulate' humans.

To tackle these challenges, ITHRUI analysed robot control architectures built with the sense-model-plan-act paradigm and identified three different strategies that improve performance. This was successfully achieved on two different robot platforms, namely the HERB robot platform at the Carnegie Mellon University in the United States, and the iCub platform at the Middle East Technical University in Turkey.

The new strategies can effectively complement current robot platforms and help improve them over time. In this vein, the project team also articulated a unified framework for improving human-robot interaction. Thanks to these efforts, collaborative robot manipulation platforms are bound to improve. The implications for robotic technology in a large number of fields could be profound.

Keywords

Robots, robotic technology, ITHRUI, sense-model-plan-act, human-robot interaction

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ITHRUI

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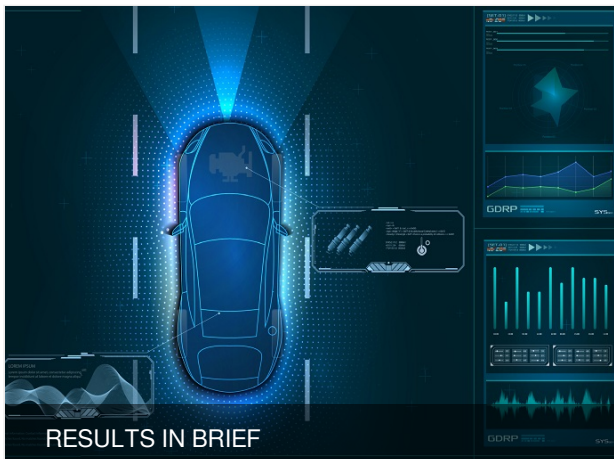
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