Advancing Robotics to Help Humans

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CURRENT RESEARCH

Teaching robots to successfully perform daily tasks and adapt to changing environments

Imagine a surgeon who has watched and learned from millions of surgeries. Now imagine he is able to recall exactly which of those scenarios are most similar to what he is currently experiencing in the operating room and how it will play out. With tele-operated robots like Intuitive Surgical's da Vinci being used for over half a million surgeries each year, such data sets will soon exist. While building up such extensive experience is not possible within the lifetime of a human surgeon, computers could watch and process videos of all surgeries ever recorded.

The challenge, of course, is for computers to make sense of all this data and put it to good use. If this were possible, such a system could inform surgeons in the operating room about similar cases, how they were handled, and how that played out for patients in the short and the long run. Beyond that, it might even be able to directly, robotically control some of the surgical instruments and perform parts of the surgery autonomously.

Such a system would make widely available the most advanced surgical decisions rather than being limited to those patients who happen to have access to the top surgeons. It would also enable surgeries to be performed remotely in areas where medical attention is sparse. Similar technology would enable basic medical functions to be performed without the presence of a doctor. Patients would be able to receive at-home-care with robotic nurses. If the patient is disabled the robot would be able to fold laundry, help bathe the patient, clean the dishes, and complete a myriad of other necessary chores. While this appears to be next millennium technology, Dr. Pieter Abbeel of...

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AFFILIATION

University of California, Berkeley

EDUCATION

- Ph.D. in Computer Science, 2008,Stanford University
- B.S./M.S. in Electrical Engineering, 2000,University of Leuven

RESEARCH AREAS

Technology, Robotics

FUNDING REQUEST

Your contributions will allow Dr. Pieter Abbeel to advance robotic capabilities through advancing the ability for robots to learn. You could become a part of Dr. Abbeel's initiative to advance robotics, with a variety of medical and societal benefits worldwide.