

Humanoid robots:

Will they ever be able to become like us, and if so, do we want this happen?

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27. Juni 2016

1 What's it mean?

While the precise meaning of the term “humanoid” is a little ambiguous, it can generally be understood to mean “human like” or “resembling human”. In its most basic implementation a humanoid robot would therefore roughly follow the human body plan – that is, possess a torso, two legs, two arms and a head. More specifically, this basic layout allows the humanoid robot to walk upright and work with its hands. Depending on the sophistication of the robot, one can easily imagine, that a future humanoid robot could do all the physical work, which humans do today.

2 Current research

Currently, the research and development of humanoid robots is still in its infancy. One of the most difficult challenges is also one of the most essential features: bipedal locomotion. While great strides have been made in that regard, robot locomotion is still inferior to that of humans or other animals. ASIMO, one of the most recognisable and advanced humanoid robots [1], still looks somewhat clumsy and jerky in its movements, when compared to a human. Even so, the newest iteration of the robot has more than quadrupled its speed when compared to models from merely a decade earlier [2].

3 Future application

Given the great pace of innovation in the field of robotics, it is conceivable, that humanoid robots in the not so far future achieve a level of dexterity, which allows them to perform similar to humans. The potential applications are numerous. The great benefit of a humanoid form is, that there is little to no need to adapt the infrastructure or working environment in order to make use of robots. They naturally just “fit right in” and can be assigned tasks, which are either too strenuous, repetitive or outright dangerous for humans. Imagine for example disaster relief in an unstable or otherwise dangerous environment or the handling of hazardous materials. It is easy to agree, that the use of humanoid robots would be preferable to the potential loss of human life in such a scenario. Given the robots of tomorrow even achieve a certain degree of autonomy, there is no limit to the kind of work they could take off humanity's shoulders. One might even go so far as to imagine a sort of utopian society, where all simple work is performed by robots, whereas humanity is left to focus on academics, art or simply leisure. While this might seem like a desirable outcome, the development of human-like robots need not necessarily stop there.

4 Possible downside

Even today researchers are trying to make their robots more life-like. Unlike ASIMO, which is clearly mechanical in its appearance, these robots are designed to look and act human. The rationale behind this design decision is, that it allows for a more natural communication between humans and robots. In order to achieve this goal, many higher functions, like face/voice recognition, speech synthesis and artificial intelligence are required [3]. Today these robots are easily identifiable as such (a phenomenon also known as the “uncanny valley” [3]) and conversation between a robot and a human is not possible. However, if robots like these, commonly referred to as “androids” will be able to process language naturally someday, one might argue, that, while they may not think the way humans do, they will have achieved a similar level of intelligence [4]. It is at this point, that predictions become exceedingly difficult and a new conundrum appears. If it talks, acts and looks like a

human, does it not deserve the same rights as a human? Where exactly lies the line, separating humans from artificial human-like androids? The behavior of a humanoid robot, equipped with a true artificial intelligence is impossible to predict. But it seems, that an AI, able to improve itself and learn, would eventually outperform any human at any task, making humans redundant. Even if these beings were benign, in face of the potential danger, there is little to be gained from developing such machines, compared to a less intelligent ASIMO-type helper robot.

5 Conclusion

All things considered, there are no clear-cut lines in the development of humanoid robots and their intelligence. It is impossible to say, whether a true artificial intelligence is even achievable and if so, what that would look like. Nevertheless humanoid robots are being researched and will be of great benefit to humankind in the near future. It is up to those involved in the development of humanoid robots to act responsibly and not allow progress to outpace our understanding of the technology and the ethical questions that may arise from it.

Literatur

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