

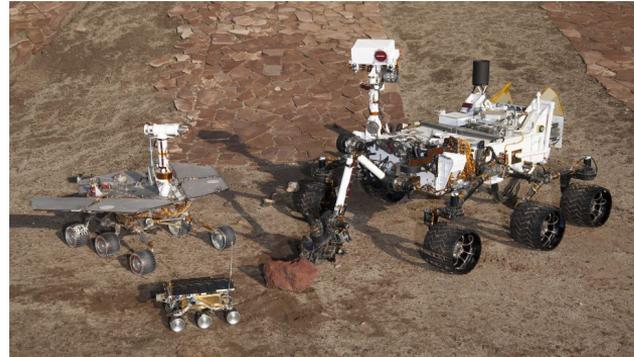
The Future of Robotics on Mars

Bert Love



Past Martian Robots

- Orbiters, landers, and rovers have dominated exploration of Mars thus far
- Some believe robots have done all they can do and that now we need human explorers



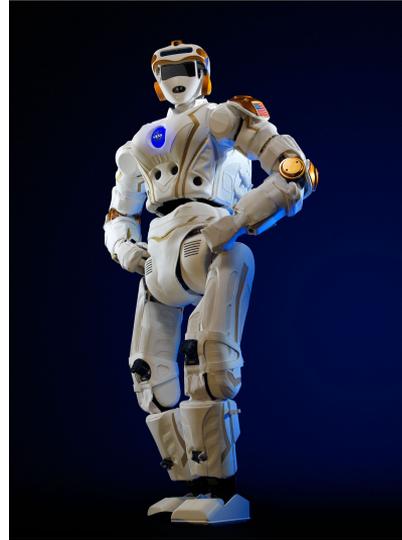
Space.com

The Future: Humanoids

- Most closely match the capabilities of humans



Wired



NASA



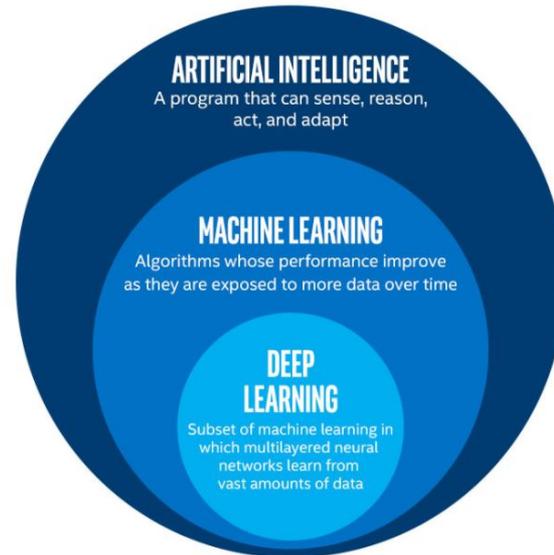
Problems with Humanoids

- Lack of intelligence compared to humans
- Martian environment is difficult to navigate
- Insufficient energy sources
- Communication latency



Solutions

- Multiple applications of AI and machine learning to bridge the gap in intelligence
- Can use sensory data to map and reconstruct the surrounding environment
- New energy sources being developed for mobile robots



Towards Data Science



Conclusion

- Humanoids and other advanced robots still have a long way to go, but there is undeniable potential for their use on future Mars missions
- Not mutually exclusive from manned exploration



Space.com



Pictures

<https://www.space.com/mars-rovers-after-opportunity.html>

<https://www.nasa.gov/feature/r5/>

<https://www.wired.com/2014/01/forget-small-steps-nasa-wants-huge-robotic-strides/>

<https://www.wired.com/story/atlas-robot-does-backflips-now/>

<https://spectrum.ieee.org/automaton/robotics/robotics-software/coordinated-robotics-winner-nasa-space-robotics-challenge>

<https://towardsdatascience.com/cousins-of-artificial-intelligence-dda4edc27b55>

<https://www.space.com/16765-private-space-technology-business-plan-contest.html>