Robotics in Space

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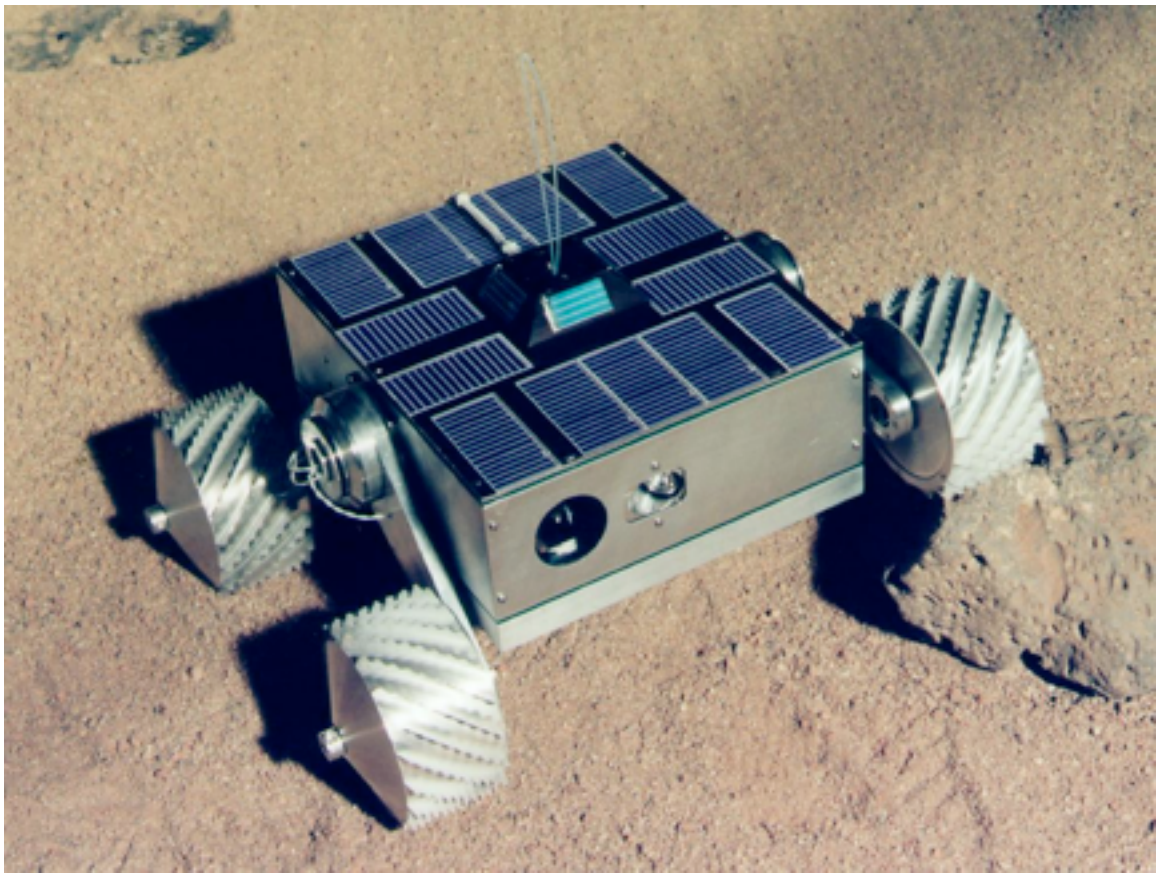

Figure 1. “Mars Nano Rover.”

Robotics in Space

OVERVIEW

At present, it is impossible for people to walk on anything in outer space but the moon. This limitation, because space still needs to be researched and explored, has led to the invention of robots who can take the place of human astronauts. “Robots”, according to Princeton University’s WorldNet dictionary, means “a mechanism that can move automatically”. The Mars Nano Rover is an example of such technology used to explore the surface of Mars (see Figure 1). Robots in space can also include mechanical implements that help human astronauts do their work. The Canadarm, which is a mechanical arm attached to and controlled by astronauts aboard the Space Shuttle, is thought by many to be Canada’s greatest contribution to space exploration (Wilcox, Ambrose, and Kumar 25).

Whether robots are controlled “remotely” from earth or “locally” by astronauts aboard the Space Shuttle, robots in space are designed to withstand the harshest, most unpredictable elements (Wilcox, Ambrose, and Kumar 25). This makes them doubly useful for exploring hard-to-reach surfaces on earth like the oceans, Antarctica, and vast deserts like the Sahara (Wilcox, Ambrose, and Kumar 31). Robots can do anything in space and on earth that humans cannot, and it is much more cost effective to use them rather than people. No rocket fuel needs to be wasted picking them up after a mission because they can be left in space (Wilcox, Ambrose, and Kumar 26). Robots can travel much farther and for longer periods of time than humans and their effectiveness for exploring space, which is fascinating for its resources, scientific knowledge, and endless multitude of other discoveries, is increasing as new developments in space robotics are made.

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RECENT DEVELOPMENTS

Robonauts

Currently, there is a new movement of creating “robonauts”, or human-like robots, to do work alongside human astronauts in space. Robots and humans cooperatively assemble machinery and move around the International Space Station in zero gravity environments with ease (Wilcox, Ambrose, and Kumar 28).

AERCam Sprint

Another new development, the AERCam Sprint, is a robot which was used to inspect the outside of the Space Station remotely from earth. The project became non-operational after this mission, but after the Space Shuttle Columbia crashed in 2003, the project was funded again as it was seen that the robot could have salvaged the shuttle (Wilcox, Ambrose, and Kumar 31).

Manipulators

Canada, in particular, has shown strength in the creation of manipulator robots like the Canadarm. Manipulators can lift and move objects in space without using excessive force (Wilcox, Ambrose, and Kumar 26). This is very important for repairing space technology, taking cosmic samples, and conducting delicate experiments aboard the Space Station. In recent years, Canada’s manipulators have surpassed Europe, Japan, and the United States in all its different applications in outer space (Wilcox, Ambrose, and Kumar 39).

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THE ROLE OF TECHNICAL COMMUNICATORS

Aerospace Industry Outlook

According to Deloitte, an established financial advisory firm, the aerospace industry outlook was the best it has ever been in 2008 and appears to be stabilizing in 2010 (“Aerospace and Defense”). Amidst the worst job market in nearly 80 years, Deloitte claims that the aerospace industry seems to be doing “outstanding” (“Aerospace and Defense”).

The industry is only 106 years old (its beginning was marked by the invention of the Wright Brothers’ plane) and has already produced the Internet, GPS, radar, and successfully landed man on the moon (“Aerospace and Defense”). Old technology, successful and not, needs to be refurbished and documentation written for every new invention. What other historically significant inventions come out of the aerospace industry can only be imagined.

Space Robotics and the Technical Communicator

Every astronaut, astrophysicist, and aerospace engineer around the world needs to read technical documentation about what they work with. Technical communicators will find the aerospace and robotics fields fascinating because they will work with scientists and technical communicators from all around the world.

It has often been said that space is the final frontier, and it will forever remain so because there are endless opportunities in space exploration, development, and research. Earth’s resources are fleeting, but the universe is ever-expanding. This

is a problem to which there is no solution, which makes it appealing for the technical communicator. Since there is a huge technology gap between what is known and utilized, the aerospace industry has potential to be a place of great economic growth and productivity for individuals and society (Agnew). Imagine sustainable resources on the moon, peace between nations working together, and technologically-advanced housing orbiting earth for all. These are just a few dreams technical communicators in the fields of aerospace and robotics can help make real.

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