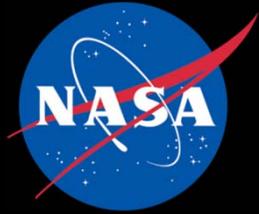




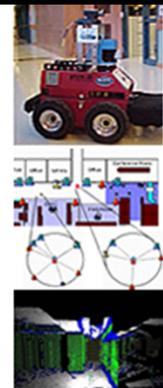
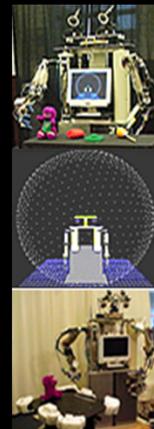
Robotics at NASA and Beyond

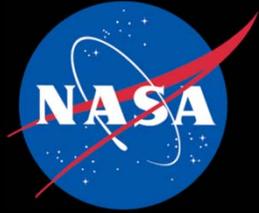
Dr. Kimberly Hambuchen
NASA Johnson Space Center
Software, Robotics and Automation Division



Introduction

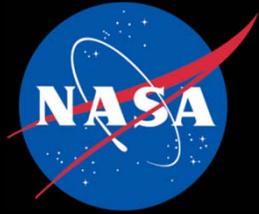
- Graduate of Conway High School
- Vanderbilt University
 - Bachelor of Engineering
 - Masters of Engineering
 - Doctorate of Philosophy
- Biomedical, Electrical and Computer Engineering
- Intelligent Robotics Laboratory
- NASA GSRP Fellowship





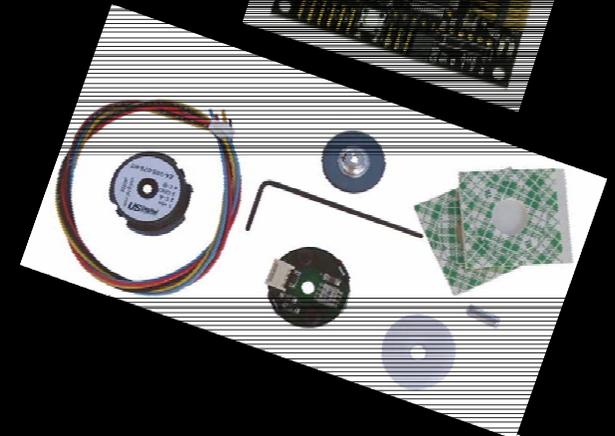
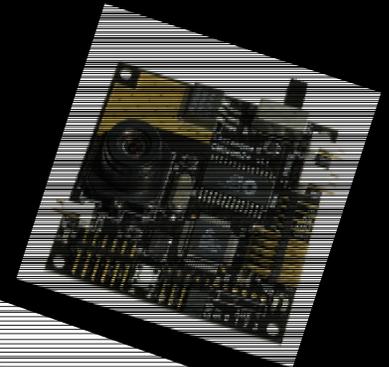
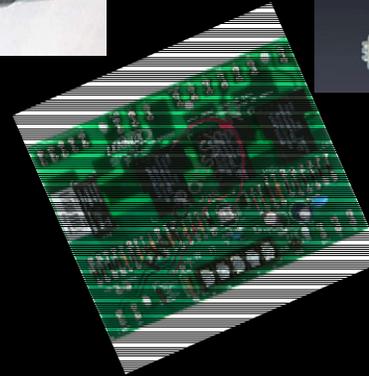
What is a robot?

- A robot is a mechanical and/or electrical device that performs tasks on its own, whether in a repetitive or intelligent fashion.



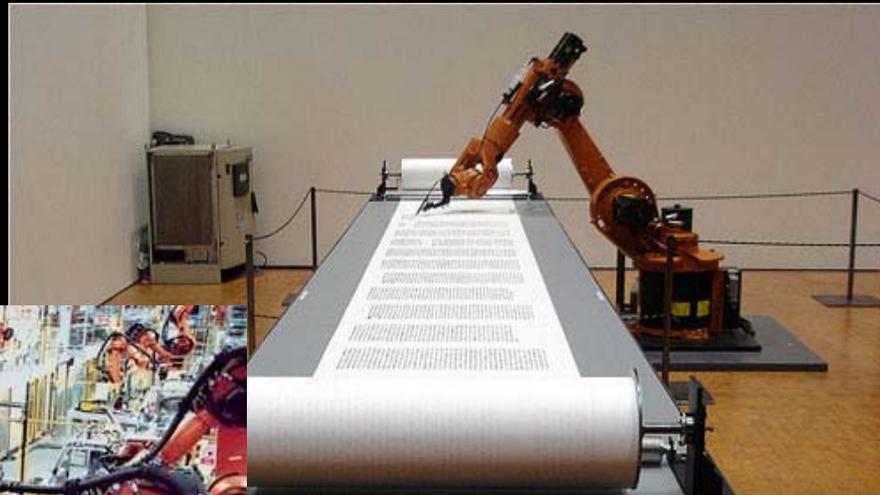
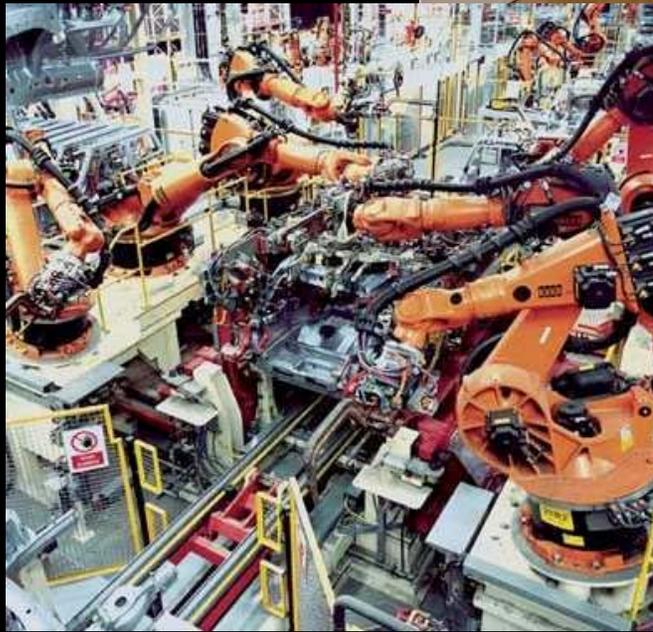
Robotic Fields

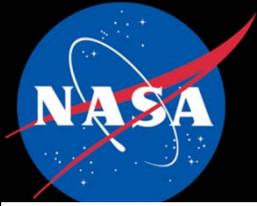
- Mechanical
- Electrical
- Software
- Psychology
- Cognitive Science
- Human Factors



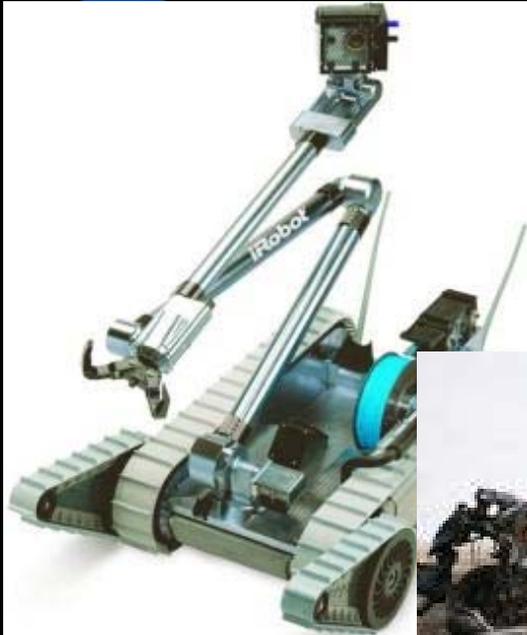


Robots in Manufacturing





Robots in the Military



Packbots



Unmanned Ground Vehicles
(UGVs)

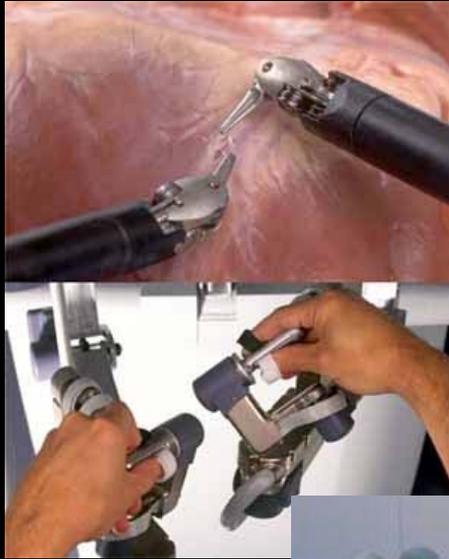


Big Dog

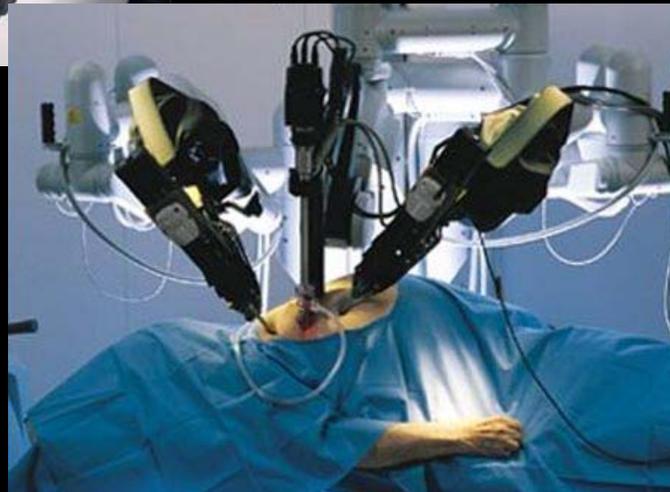




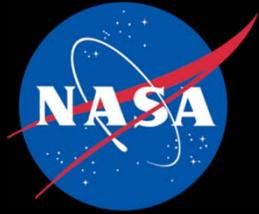
Robots in the Medical Field



Da Vinci
Surgery Robot



Helpmate



Robots for Search and Rescue

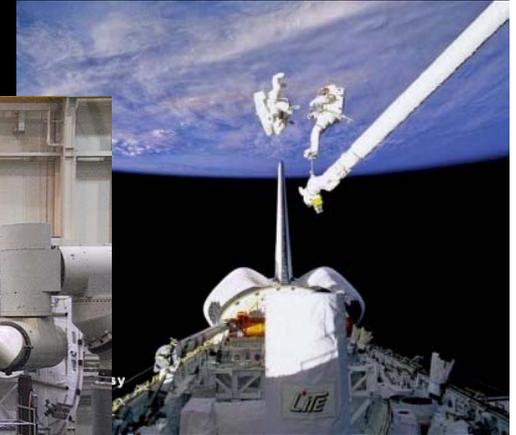
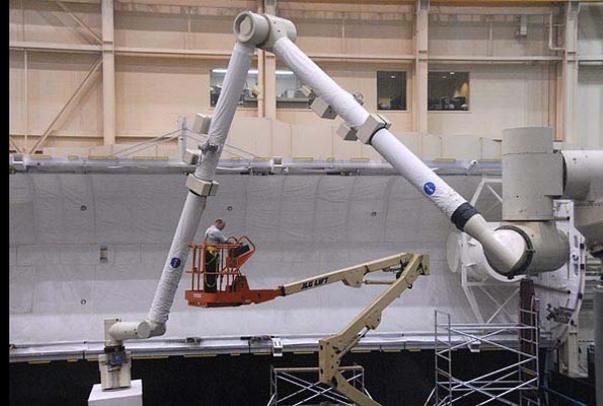




Robots in Space



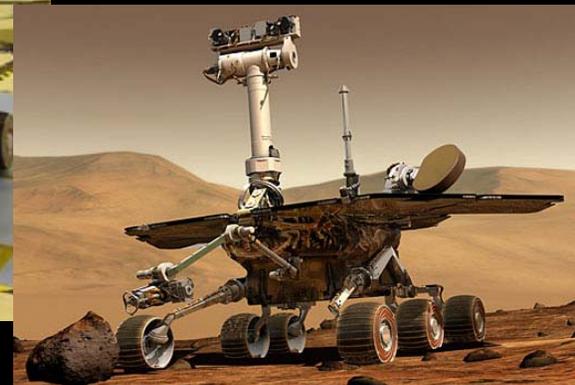
Voyagers

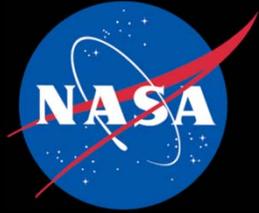


CanadaArms



Mars Rovers





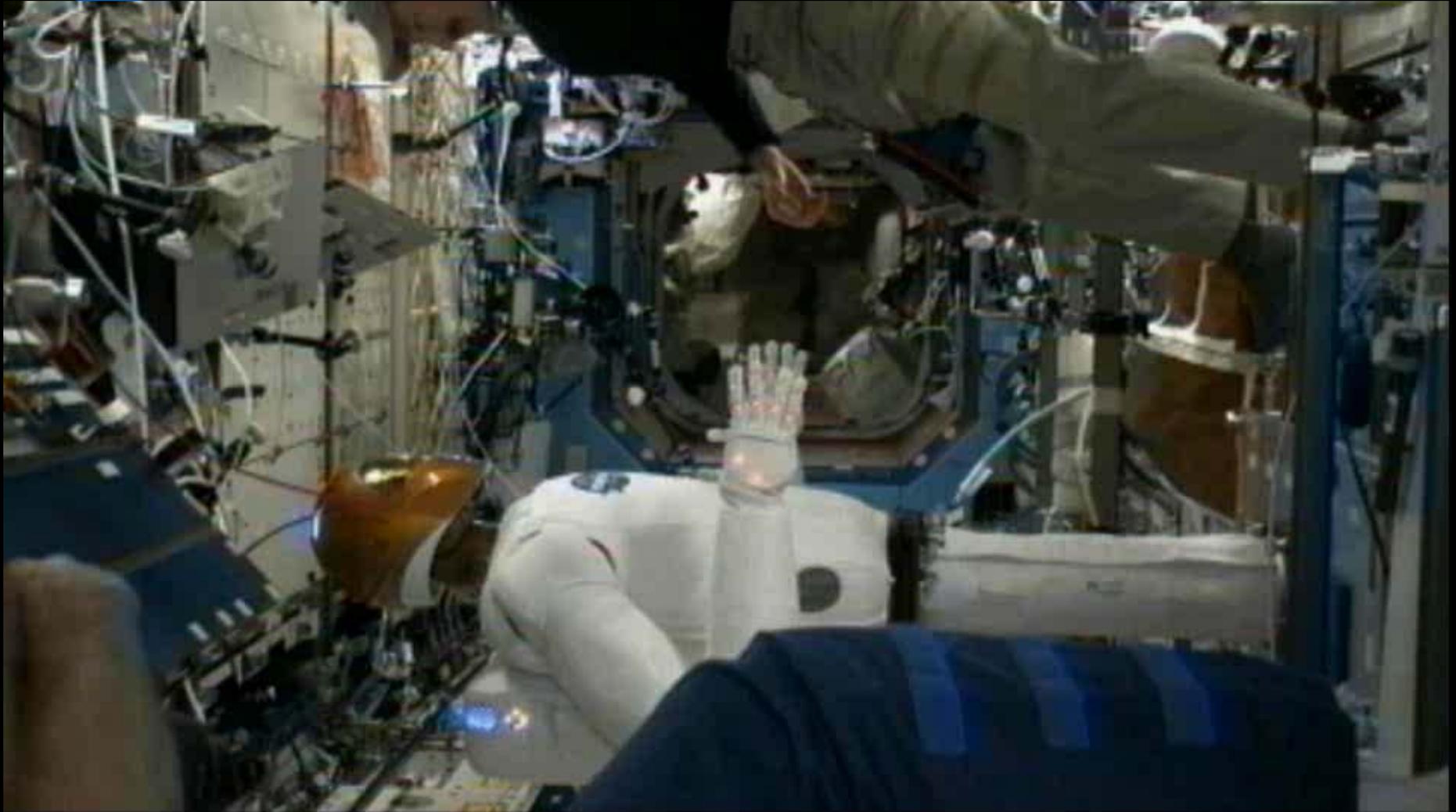
Robots at NASA's Johnson Space Center



Robonaut 2

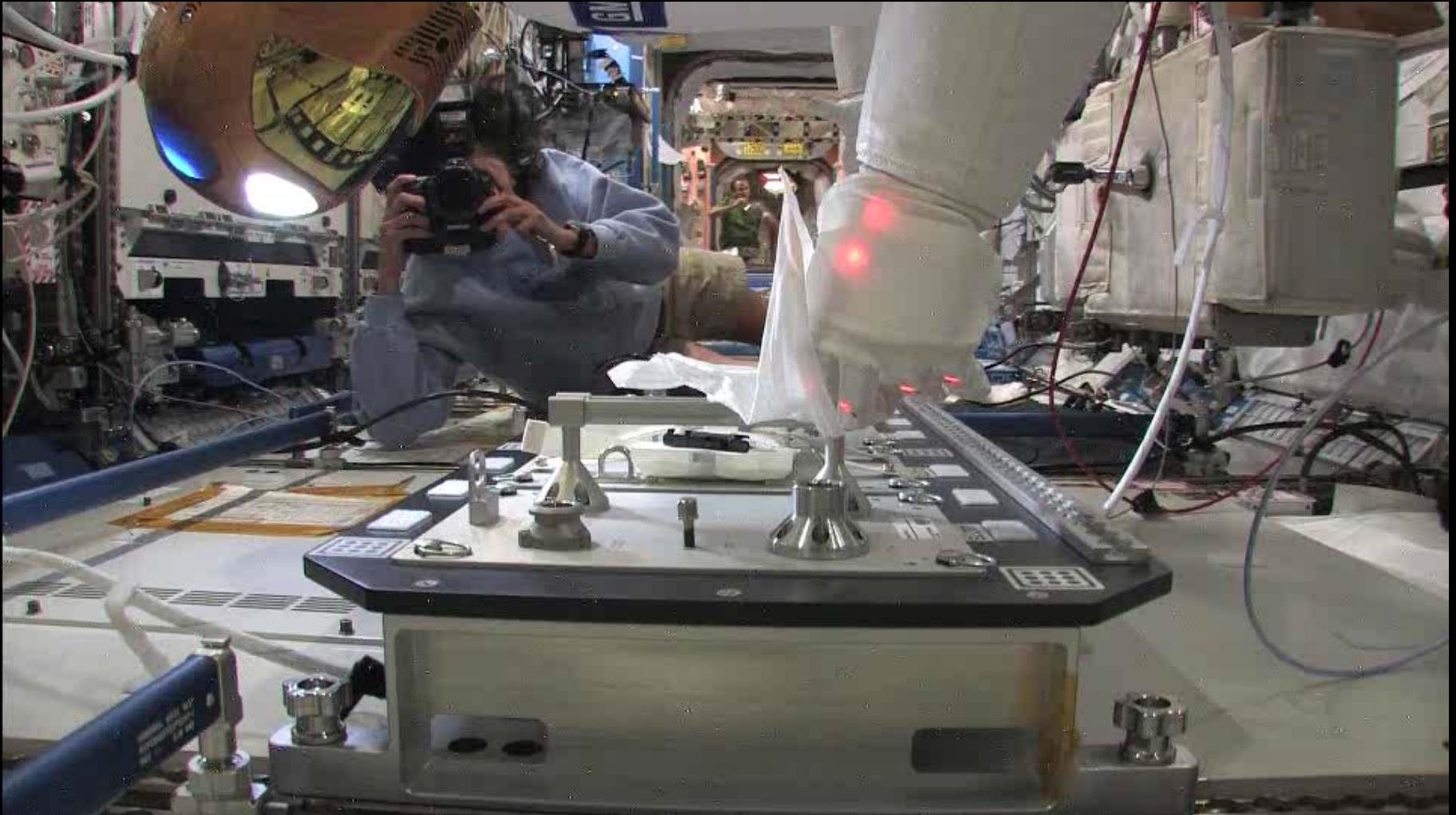


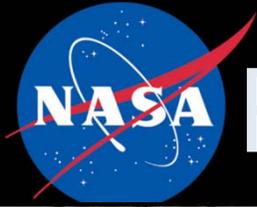
Robonaut 2 on ISS



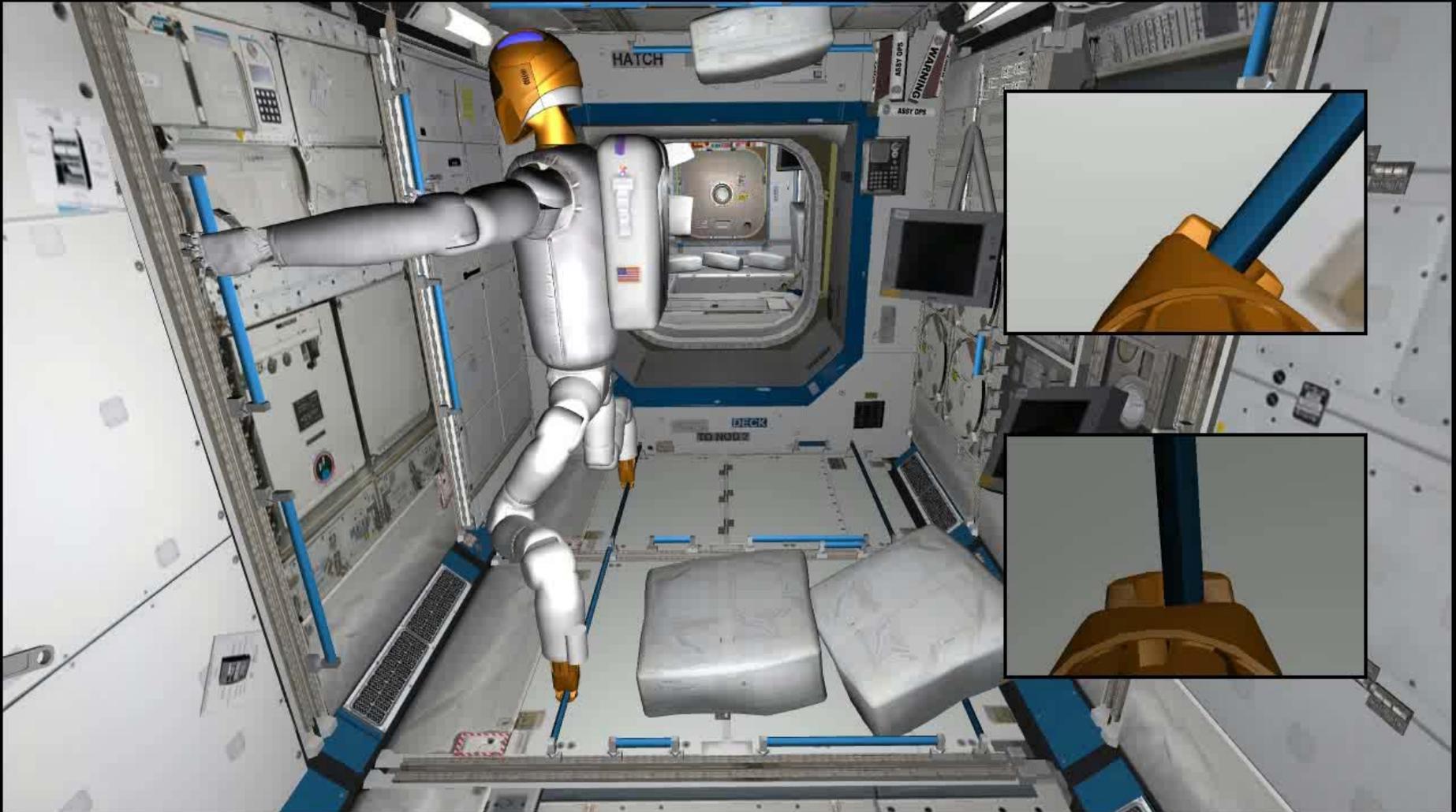


Robonaut 2 on ISS



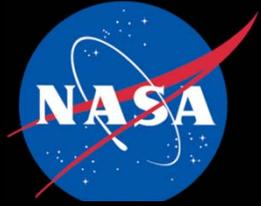


Robonaut 2 Climbing on ISS

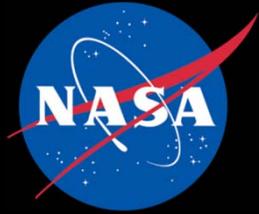




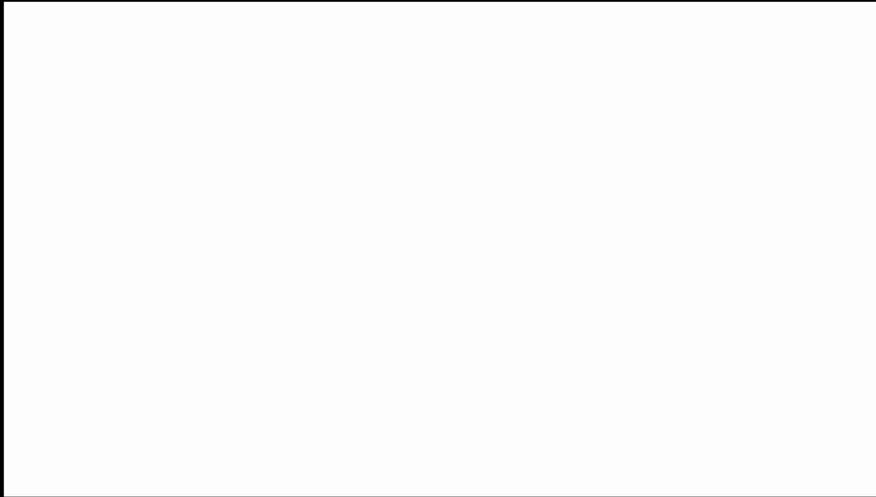
SEV and Centaur 2



X1



DARPA Robotics Challenge





How can you get involved with NASA?

- <http://www.nasa.gov/education>
- College internship programs
 - University of Texas A&M
 - Purdue University
 - Georgia Technical University
 - The Ohio State University
- NASA Career fields
 - Astronaut!
 - Food science
 - Biological sciences
 - Astronomy



Thank you!

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NASA Johnson Space Center
kimberly.a.hambuchen@nasa.gov