

SpiderCam

SpiderCam cable robot

System description

The SpiderCam is a cable robot, consisting of a mount, 8 cables, which are connected to 4 winches, and a control unit. The winches control the lengths of the cables and therefore allow the mount to be moved across the Exploration Hall. The mount receives data and power supply through the cables. The position of the mount can be controlled by a PC using a CAN bus. In return, the SpiderCam sends an estimation of its current position based on the lengths of the cables. The SpiderCam has been used in the projects INVERITAS and RTES-TA to simulate a service satellite.



Source: "DFKI GmbH / Photo:Alexander Grennigloh"

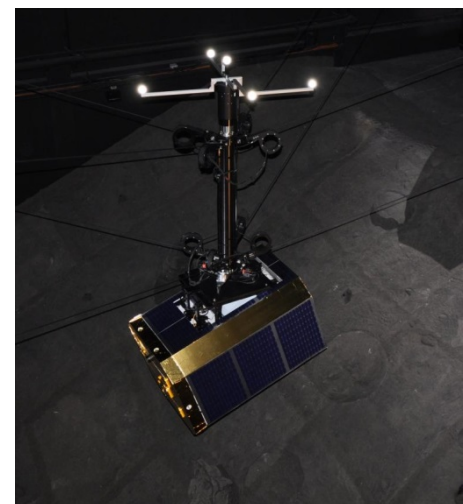
Technical details

- **Payload:** 150 kg
- **Power supply:** 4 x 32 A, 400 V
- **Speed:** max. 2000 mm/s
- **Acceleration:** max 1529 mm/s²
- **Position accuracy:** < 5 mm
- **Degrees of freedom:** 3 translations (horizontal und vertical) and 1 rotation (around the vertical axis)
- **Working range:** ca. 16 m x 7 m x 6 m
- A motion tracking system measures in real time the position and orientation of the cable robot
- A mockup of service satellite, including sensors and PC, is attached under the mount
- **Sensors:** two black and white stereo cameras, one color camera and one LIDAR laser scanner
- Camera and laser based pose estimation algorithms can be tested under realistic conditions

Application: Space robotics

Projects:

- RTES-TA**
Robotische Technologien zur Entsorgung von Weltraumschrott (10/2012 - 03/2013)
- Inveritas**
Innovative Technologien zur Relativnavigation und Capture mobiler autonomer Systeme (05/2009 - 03/2012)



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