Paper ID: 77023
student

51st IAF STUDENT CONFERENCE (E2)
Student Conference - Part 1 (1)

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MULTIFUNCTIONAL ROBOTIC MANIPULATOR ON ISS (MEXARM)

Abstract

Throughout the ISS life time, big challenges arise, which for the astronauts can take a long time to be resolved, as on earth to be supported in certain circumstances; Time is a key factor, which is why the design and implementation of a robotic manipulator MEXARM (based primarily on the CANADARM and DEXTRE), which in addition to achieving tasks that its predecessor has done, is able to navigate all around the ISS due to its extremities and subjection base, thus achieving support throughout the station for maintenance, repairs, docking, assembly and many other tasks, thanks to its more than 12 DOF between the manipulator and support extremities; This manipulator has been , developed, designed, modeled and animated (SOLIDWORKS CAD Software) under the hard conditions which the ISS faces, on the basis of inverse kinematics and using materials such as fibrocarbon and aluminum, it also expects to implement artificial vision in the future to further automate the tasks on the station as well as work that can be done on the surface of other planets.