Paper ID: 19557
student

SPACE EXPLORATION SYMPOSIUM (A3)
Mars Exploration – Part 3 (3C)

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# DEVELOPMENT OF A MULTI-SENSITIVE ISU-NASA AMES MARS ROVER'S TELE ROBOTIC ARM FOR TACTILE EXPLORATION

**Abstract**

The NASA's Curiosity rover has found some bright objects in Mars' soil some months ago, researchers to believe it is something native to the red planet. CheMin, a Curiosity's instrument makes a chemical and mineralogical analysis of the samples takes of soil from Mars. As we know, every entity is composed of matter and physical features; it is needed to make a study of the physical features to learn more about the objects. Form and superficial texture occupy a privileged position between the physical features, form is a visual feature that allows us to recognize objects and beings of the environment and superficial texture is the material structure of a surface that is perceived as a tactile sensation. In this sense, the objective of this project is to determine the physical features of the object, developing a Mars rover's multi-sensitive robotic arm in which can be remotely controlled, able to touch and hold objects delicately, to view them in detail and determine approximately its superficial texture by tactile discrimination. To develop the robotic arm is needed to build a prototype for test in which were used ultra-sensitive sensors coupled to a model of robotic arm built with recyclable materials in which stepper motors are complexly controlled. The final project is aimed at assessing rovers for future missions under different microgravity forces and environmental conditions on Moon and Mars.