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## DESIGNING AN ORBITAL FACTORY WITH THE INNOVATION OF 3D PRINTER CUBESAT

**Abstract**

The researchers of Notion Robotics Lab has planned to develop a 1U Cubesat/ Small Satellite that will 3D print a conductive trace to be pair a damaged solar cell using additive manufacturing techniques. This aim is to travel to GTO and face the difficult radiation environment of Van Allen Radiation Belt and attempting to 3D print in space and remains challenging due to reduced gravity vacuum and extreme temperatures environment. A spacecraft in orbit might experience many events such as electron charges and debris impacts that can damage solar cells. If this constantly occurs the electronic power systems of the Cubesat will fail to provide energy to the system and thus the whole satellite will be unable to keep operating. The designed 3D printer includes three main subsystems the material dispenser the gantry table mechanism and the motion controller. The research paper describes the development of the 3D printing additive manufacturing including the conductive ink material selection. The design of the printer mechanism the assembly and the integrating of components as well the preliminary test results  
Keywords:- Cubesat, 3D Printer, Manufacturing, Material Selection, Components