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Robotics and automation in space systems: Utilization of infrared laser to improve communication in space systems review

Tariq Tashtoush, Esteban Otero, and Agustin Velasquez
Texas A&M International University (TAMIU), USA

Robots are programmable mechanisms that have been developed to aid humans. Their capability to replace a human in the sense that they can achieve repetitive and detailed tasks at impressive speeds with a high precision with minimal to no errors. Robots have also greatly contributed into the exploration of deep sea and space environments, where it extremely difficult for humans to explore due to environments and limited resources. This paper will briefly explain the background and communication problems encountered with robotics and automation on space systems. Orbital robots and surface robots both face challenges when in the vacuum of space. Robots in space are all designed specifically to achieve a specified task such as providing GPS access, taking images, live streaming videos of space, robotic workstations and planetary exploration. The space environment creates several constraints into the operation and design of a robot and automation. Radiation, vacuum, extreme temperatures, gravity, power and communication are just a few of the problems faced in the space environment. The main objective of this paper is to provide an insight of faster a communication between command station and space robots using infrared lasers.

Biography

Tariq Tashtoush is a Visiting Assistant Professor of Systems Engineering in Texas A&M International University (TAMIU), Laredo, TX. He got his PhD and M.S. degrees in Systems and Industrial Engineering from State University of New York at Binghamton on 2013 and 2009, respectively and his B.S. in Electromechanical (Mechatronics) Engineering for Jordan University of Science and Technology (JUST), Irbid, Jordan on 2005. Throughout his working experience and formal education in multidiscipline of engineering, he acquired a sound knowledge and experience of leading edge engineering principles, tools and practices in the field of simulation and systems design, production quality and management, lean manufacturing principles, robotics and automation, 3D printing processes, engineering statistical analysis, project management, optimization, instruments and electrical devices, reliability, Healthcare Systems, and Human Factors. He is Lean Six-Sigma Black Belt certified, he worked at Continental Automation Systems where he implemented Lean manufacturing and Six-Sigma principles, machine production control, preventive maintenance scheduling, and quality monitoring to reduce non-added value actions and increase productivity and the production lines' throughput. His research interests lie in the area of systems designs and optimization, production quality, electronics manufacturing, electronics reliability and robotics.

tariq.tashtoush@tamiu.edu

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