

# **Palestine Polytechnic University**



**College of Engineering**

**Department of Electrical Engineering**

**Industrial automation Engineering**

**Graduation Project**

**Robotic System for Cleaning Photovoltaic Panels**

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**Project Title**

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According to the laws, At College of Engineering and Technology and the supervision and follow up of this Project direct supervisor, with the approval of the examining committee. This project submitted to the Electrical Engineering Department in order to meet the graduation requirements with a bachelor's degree in engineering Major of industrial automation engineering.

**Supervisor Signature**

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**Examining Committee Signatures**

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## **Abstract**

Growing interest in renewable energy had led t solar photovoltaic industry to expand notably in the last decade, PV station operator must keep the panels clean to increase energy production , which is a big challenge and difficult to achieve in certain areas .

The effect of dust is different from region to region, there are two types of dust, dry dust and wet dust, dry dust can be cleaned without using water, while wet dust water must be used with certain pressure, in Palestine most of the power plants have dry dust effect.

There are many types of cleaning systems, a new prototype design is made and tested on JDECO dead sea PV plant in Jericho , it is based on robot system for cleaning dry dust only , with at least 5% increase of energy production and low cost .

This prototype is suitable for other PV power production plants, and no need to change the infrastructure of the plant.

The motion of this robot based on servo motor, and the operation controlled by scheduled process using internal real time clock, or by human interface control and monitoring (control room).

The communication process based on sending or receiving data via WIFI, from control room to the robot using RF module, furthermore it can be monitored from abroad using Ethernet.

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