

# Internet of Things (IOT) based Robotic Arm

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**Abstract:** We examined mechanism design and kinematic simulation of a new six degrees of freedom (DOF) Internet of Things (IOT) robotic arm with rotational joints and a linkage motion mechanism. In the design, a parallel linkage mechanism, accompanied by an additional set of bevel gears, was used to create the desired motion for all six links along with transfer of all actuators to the robot's base to reduce the mass of most of the arms. These changes resulted in reduction of the torque required for joints 1, 2, and 3. Using this parallel mechanism ensures dependence to motion links and creates a special case for the control of the robot and more rigidity against unwanted movement. Initially, we examined mechanism design methods for a parallel linkage mechanism and considered methods for application in an operational robot. In the next step, we determined the kinematic relationships that were established between the robot's actuators and joints spaces due to the use of this mechanism. Then, we developed an example of the robot's function in a performance simulation. The simulation results indicated that the mechanism and controller performance were acceptable.

**Keywords:** Robotic Arm, 6 DOF, Kinematic Simulation.

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