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QR_code Based Packed Drug Sorting Autonomous Robotic Arm

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Abstract

In this study, a 5 degree of freedom (DOF) a QR_code based packed drug sorting robotic arm, which is controlled by Arduino Uno, is developed and fabricated.A mobile application i.e. QRDUINO which is designed for the purpose of operating and monitoring a robotic arm by means of a Bluetooth connection. The maximum handling torque is 1.44 kg-cm. The maximum payload the gripper can hold an object is around 150 gram (0.15 kg). The total load of the robot is 580 gram by considering the bolt weight at the gripper. Its weight is 5.7N.

Introduction

According to the Robot Institute of America, —A robot is a reprogrammable, multifunctional manipulator designed to move materials, parts, tools or specialized devices through variable programmed motions for the performance of a variety of tasks.

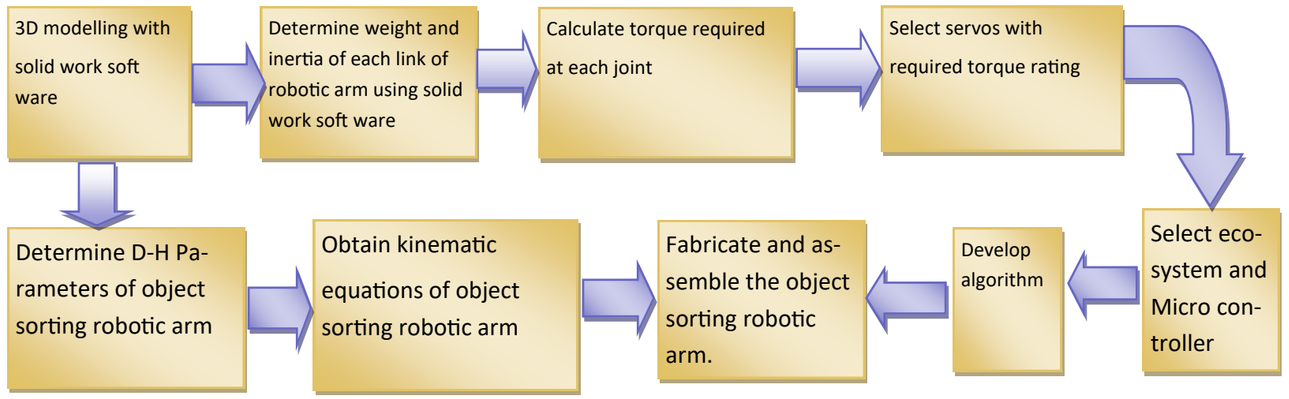
The robotic arm is also sometimes referred to as anthropomorphic as it is very similar to that of a human hand.

Humans today do all the tasks involved in the manufacturing industry by them. However, a Robotic arm can be used for various tasks such as welding, drilling, and spraying and many more.

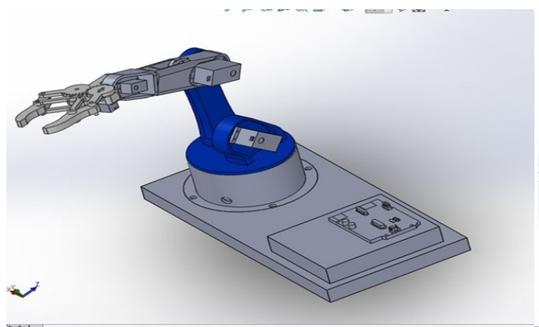
Objective

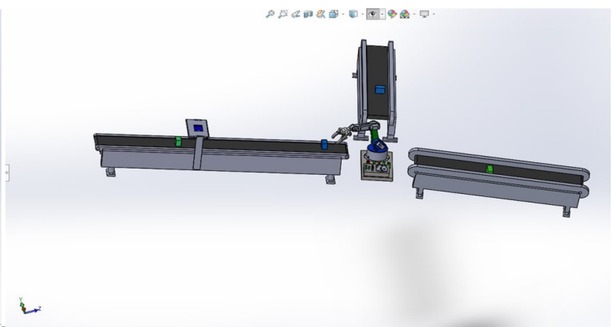
- *The main objective of this project is Design and development of a 5 degree of freedom QR code based packed drug sorting autonomous robotic arm which is commonly used in the drug store for drugs identification purpose.*

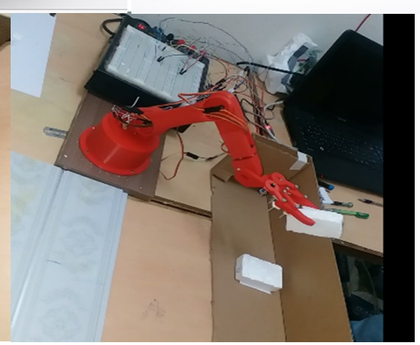
Methods



Result







Conclusion

In this study, we have designed and fabricated a 5 degree of freedom robotic arm with a gripper for sorting of two different packed drug in the drug store for inventory control.

The total mass of the arm is around 580 gram and its weight is 5.7N. Its carrying capacity is up to 150 gram of objects.

We anticipate that this kind of robot will play an important role in commodity management and the inventory of goods in supermarkets and retail stores.

Recommendation

- Adding real-time force sensors to the gripper, which controlled the different clamping force that is required for each kind of product to avoid damage by crushing, is recommended.
- Advance design of robotic arm can be further used to pick large and heavy objects and sort them effectively.

Reference

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