Motors to optimize a Conveyor Belt for use in the University of Iowa CAR Lab

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Introduction

→ CAR Lab- Controls, Automation and Robotics Lab

→ Plan
  • Construct a conveyor belt to attach to the robot

→ Using CAD models set up Rough draft for design of Conveyor Belt

→ Main focus
  • Find suitable motor that can create enough torque to move items down the belt

Right: LBR iiwa 14 R820
Left: Convery belt CAD Model
Objective

➔ Create a cost-efficient and sturdy conveyor belt

➔ Researchers
  • Allow the other researchers to test codes and programming
  • Use to robot to pick up different objects on the moving belt

➔ Students
  • Give them a chance to learn and watch the robot work in real time
Methods

→ Using Cad Software to create an online version of the conveyor belt
→ Then started construction of device
→ Researched different motors to find the best option
Different Motors

→ NeveRest Orbital 20 Gearmotor
  • Stall Torque: 175 oz-in
  • $35.00 (Andymark.com)

→ NeveRest Orbital 60 gearmotor
  • Stall Torque: 525 oz-in
  • $29.50 (Andymark.com)

→ Differences
  • Torque
  • Price

→ Pictures from Andymark.com
Now that we have a motor

We choose this motor because of two reasons

• It had a greater torque which allows for heavier objects on the belt
• Our researcher professor had one available for free

NeveRest Classic 60 Gearmotor
Future Work

→ We will move onto making a mount for the motor
  • And creating an adjustable frame
    • allows for a further track to test different skills

→ We will be creating moving pins to extend the frame
Conclusions

➔ With the stronger motor, we will be able to move heavier objects
  • This will help the researchers test the robot with more accuracy
  • Since the cost of the motor was free, we will be able to delegate the extra money to a different portion of the conveyor belt
ME Department

Thank you! Questions?