Automated Sorting Device Using Sensors and Motor Control

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The purpose of this engineering design project is to create a system that mimics what an automatic part sorting system does. This is useful as it allows for parts to be sorted without the use of external intervention. My goal is to effectively automate sorting of different sizes and colors of Lego bricks. I began with brainstorming different possibilities of sorting by color, size, materials, and weight before selecting both color and size as my two main variables. My design has three major components: the conveyor belt, sensors, and collection bin. The Lego bricks are placed onto the conveyor belt where they are scanned one by one for size or color. These values are analyzed, and the algorithm determines where to place each part. Then, a motor moves the collection bin so that the correct compartment is ready to collect the incoming part. For this project, I ran many tests to ensure that each component in the system works and that the parts are sorted properly. The largest challenge that I faced was ensuring that the conveyor belt runs smoothly, as keeping it running at a steady pace was challenging. I hope to eliminate any speed variability in my system, as it can lead to incorrect readings of the parts. One possible solution for this is to add more sensors to time the block sorting correctly. Through this project, I enjoyed learning about the systems that sense and control the movement of parts during sorting.

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