Mail Fulfillment Center

At the Center for Disability Services

Where people get better at life™

AUTOMATED PAPER REAM OPENER

University at Albany CREATE Team

In Collaboration with the Center for Disability Services

Motivation

➜ The Center for Disability Services mailing center processes an estimated 50,000 – 100,000 pieces of paper per day.

➜ Approximately 100-200 reams of paper must be opened per day.

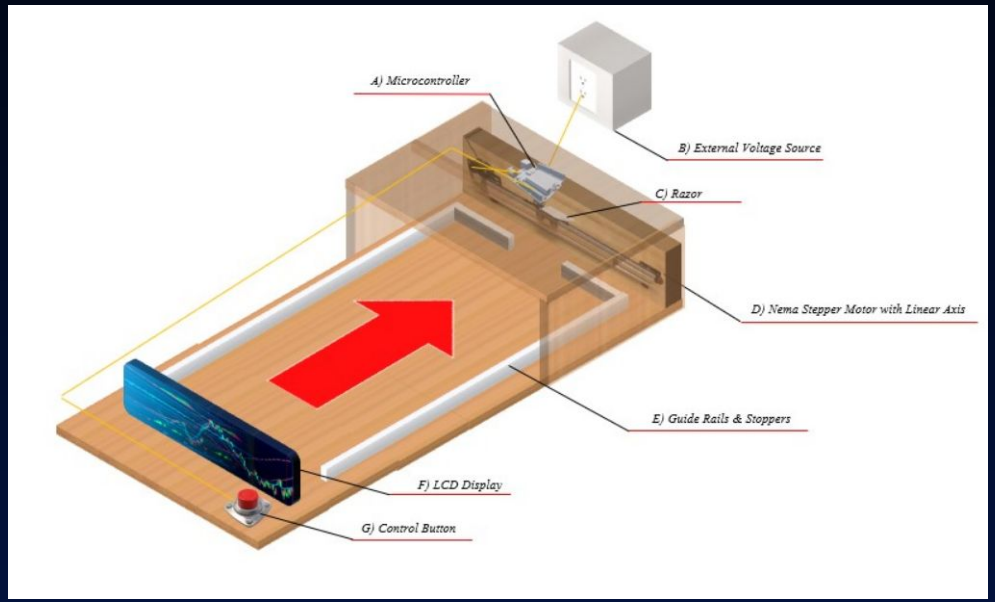
➜ The center would like to hire people with disabilities to open the reams of paper, but this is difficult due to physical dexterity issues

➜ The goal of this project is to develop a system that automatically opens reams of paper in a safe and effective way.

Live Demonstration

Logical Design

- The proposed device is a preliminary prototype that reflects the designers aptitude towards testing.



Logical Design

- The design is centered around a linear axis rail operated by a NEMA stepper motor.
- This combination makes the device capable of controlled uniform movement and as such when a razor blade is attached to the sliding linear cart it will ideally make clean lacerations to the paper ream cover.
- Along the base of the apparatus there are guiding protuberances that orient the ream in the most optimal setting. These ”stoppers” ensure that only the cover of the ream will be slit, thereby leaving the contents unperturbed.
- User interacts with the system via a button press that controls the operation of the linear rail.

Physical Design

- Physically speaking, the device is quite simple in nature and requires minimal overhead to implement.
- The current design consists of three V-slot linear rails attached together in a box formation with one side open.
- There is a stepper motor attached to each linear rail which controls the shuttle to which a

Experimental Design

- An integral part of constructing a valid design involves a thorough process of testing.
- A core requirement that must be investigated is the paper ream cutting ability of the apparatus.
- In order to test the final prototype, the system has to be tested with the paper ream multiple times.
- Since this product will be utilized by employees with physical disabilities safety is an essential testing condition.
- To ensure the safety of the employees the system will be completely enclosed.

Upcoming Schedule