

# Autonomous Book Solution (A.B.S) Laboratory Prototype

## Problem Statement:

- Libraries had to close amid Covid-19 Pandemic
- Stopped services like issuing books
- Affected over 2 million people

## Solution:

Our machine and interactive website will allow users to find and check-out books, all while maintaining social distancing and avoiding face-to-face interaction.

## BACKGROUND

Libraries have been affected due to COVID-19 pandemic. According to the American Library Association, 98% of the libraries in the U.S. had to close due to this pandemic [1]. Only a small number of libraries stayed open with very limited services. Keeping the libraries open could raise safety issues for the public and for the library staff. Both sides have concerns about their safety and protection. Libraries have been known to provide resources and services to the communities, but due to this pandemic, most of these services had to be stopped. Many libraries have continued their online services or even worked on expanding it. American Library Association also mentioned that about 74% of the libraries have tried to expand their services online [1]. Online services seem to be a quick solution in the current situation, but a lot of the resources and services like issuing physical books are lost. Converting physical books into digital books takes time and recourses that are not available to all libraries!

## IMPACT ON COMMUNITY

It is been almost a year since the COVID-19 pandemic started, in all this time millions lost access to a vital resource of information and knowledge, especially the service of checking out books. Our Autonomous Book Solution (A.B.S) machine will help these community members checkout a book from a library without coming in contact with any individual. Even after the pandemic, this service can be used to further improve library services with 24 hours access to the users.

## SUMMARY OF WORK

We started our project by putting together and modifying the shelf to meet our project requirements. After the shelf was assembled, we divided the team into two groups, one working on making sliders (*Figure 2: Sliders*) and the other making a belt system in cells to deliver books (*Figure 3: Cells*). After completion of these main features, we took on smaller features of making a tray to carry the book (*Figure 5: Tray*), QR code scanner (*Figure 4: QR Code Scanner*), and sensors for tracking book status. Our last part of this project was to add in the checkout window for users.



Figure 1: Over all view of Project



Figure 2: Sliders



Figure 3: Cells



Figure 4: QR Code Scanner

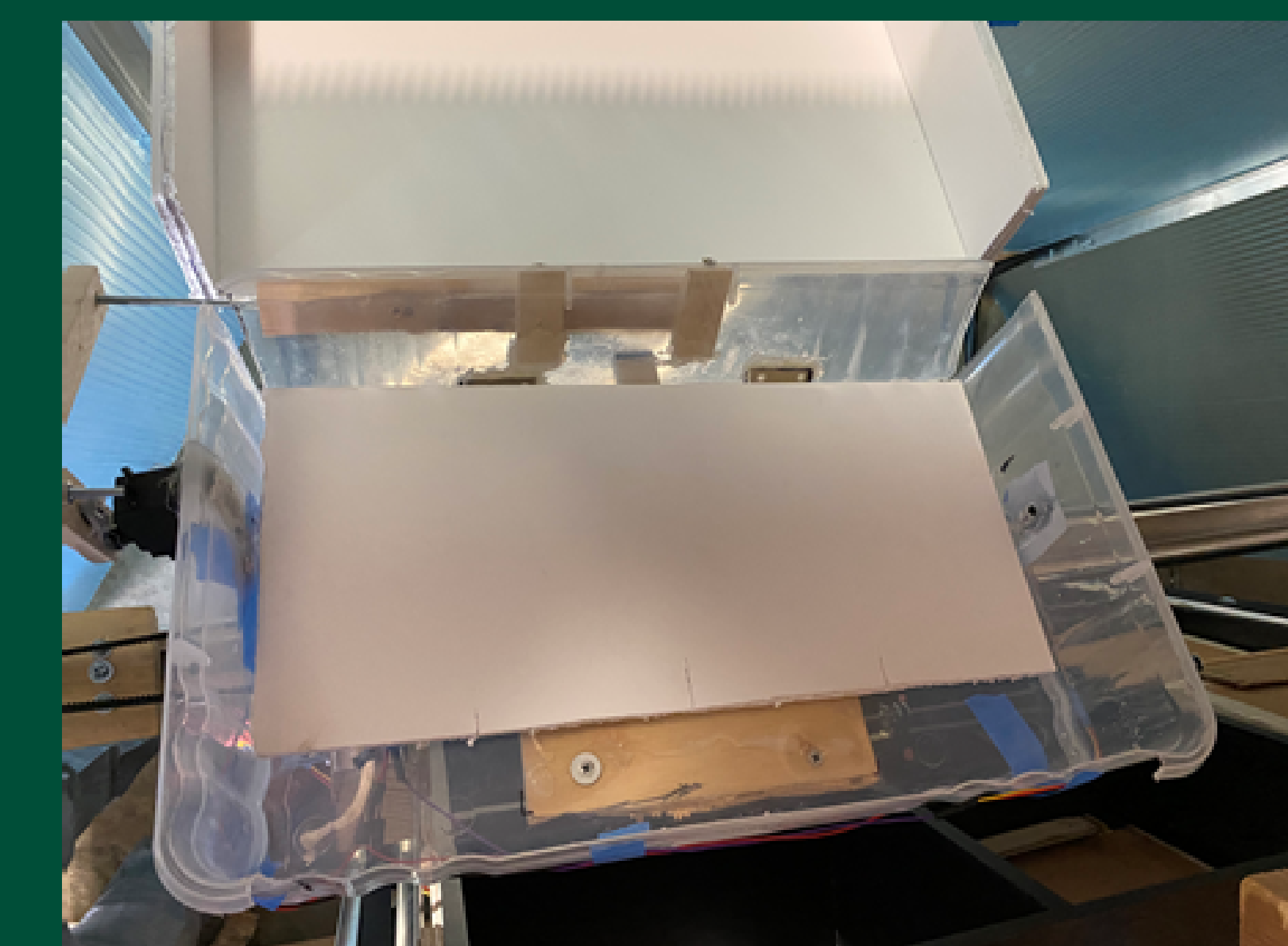


Figure 5: Tray