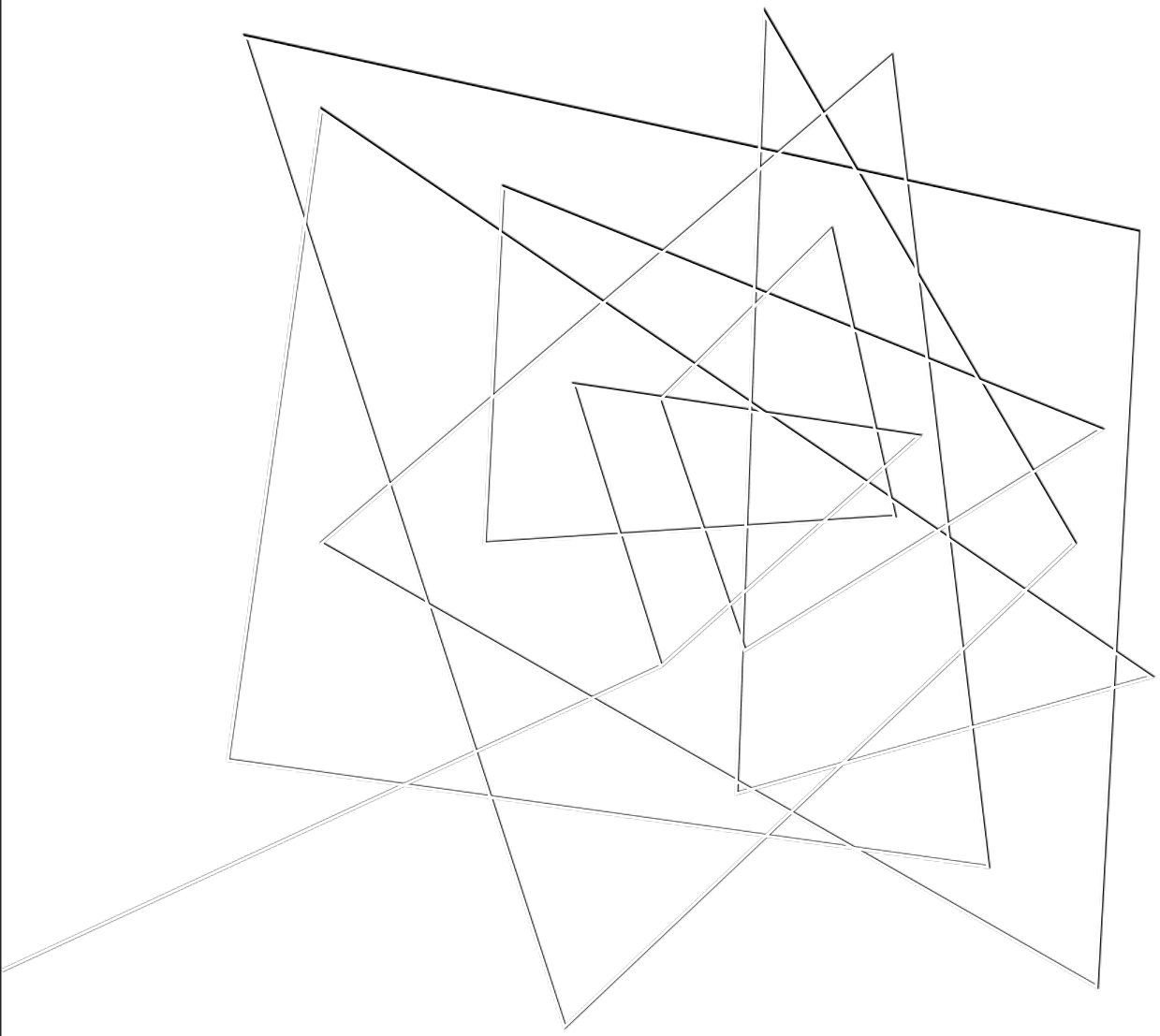


DR. PILL

Automatic Pill Dispenser

MEET THE TEAM

Jonathan Cerniaz

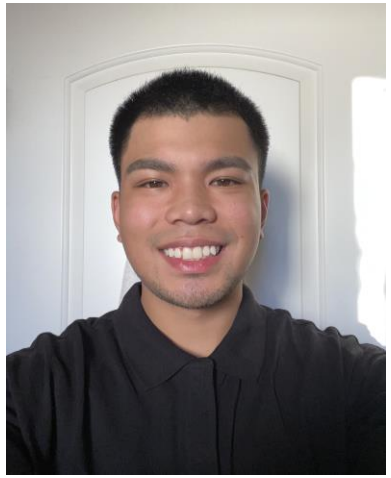
- Power Supply & Regulation
- Circuit Design

Jehmel Espiritu

- Software Development of Interface

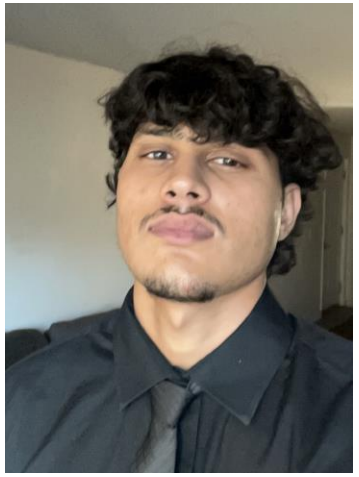
Jeremy Espiritu

- Software Development of Interface



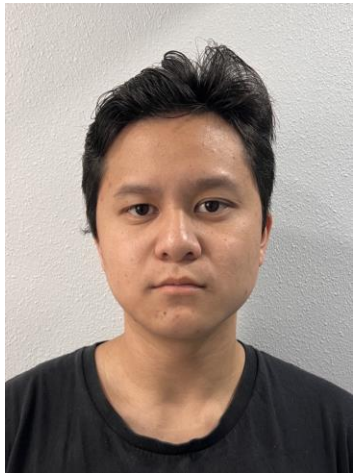
Joseph Guzman

- System prototyping and calibration
- 3D Design



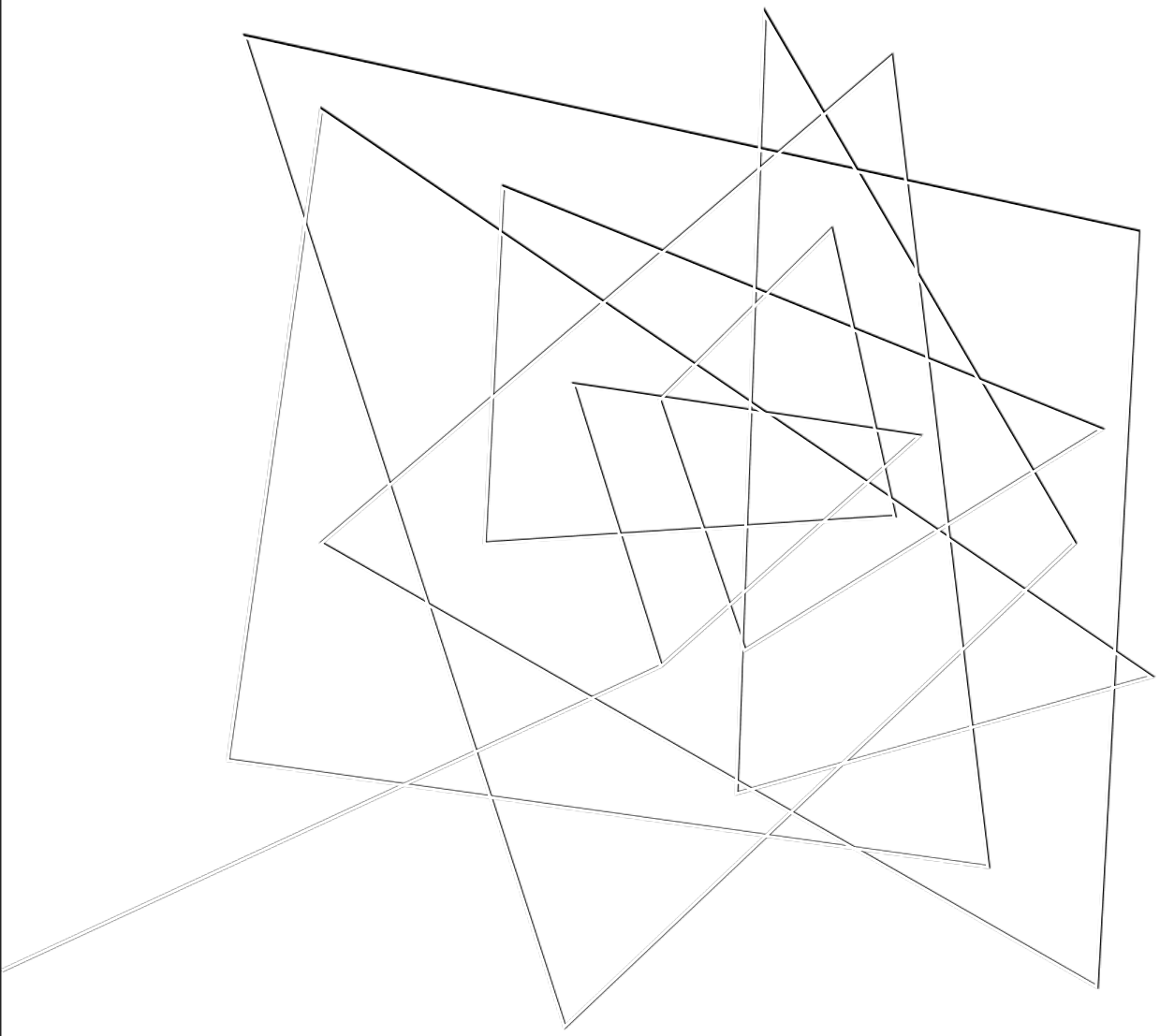
Afzal Hakim

- Log tracking and Security



Lee Roger Ordinario

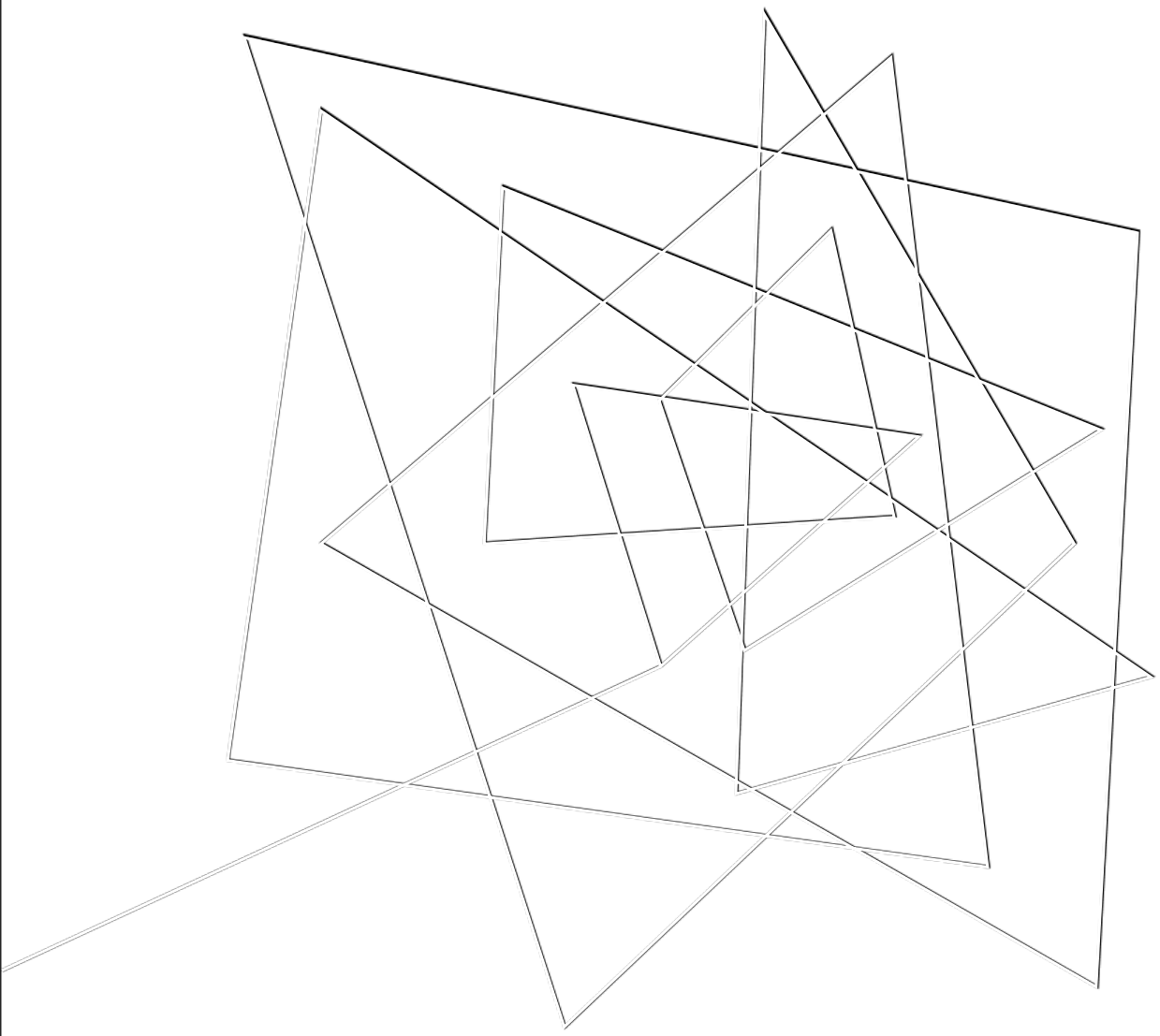
- Pill Storage System and Organization
- Soldering



PROJECT OVERVIEW

"Our project consists of..."

- Pill Dispensing
- Touchscreen Display
- Authenticators and Cloud Database



OUR 3 DEMOS

1. Dispense Mechanism & Storage

2. Displaying User Interface

3. Authentication & Security

Final: Dr. Pill The Automatic Pill Dispenser

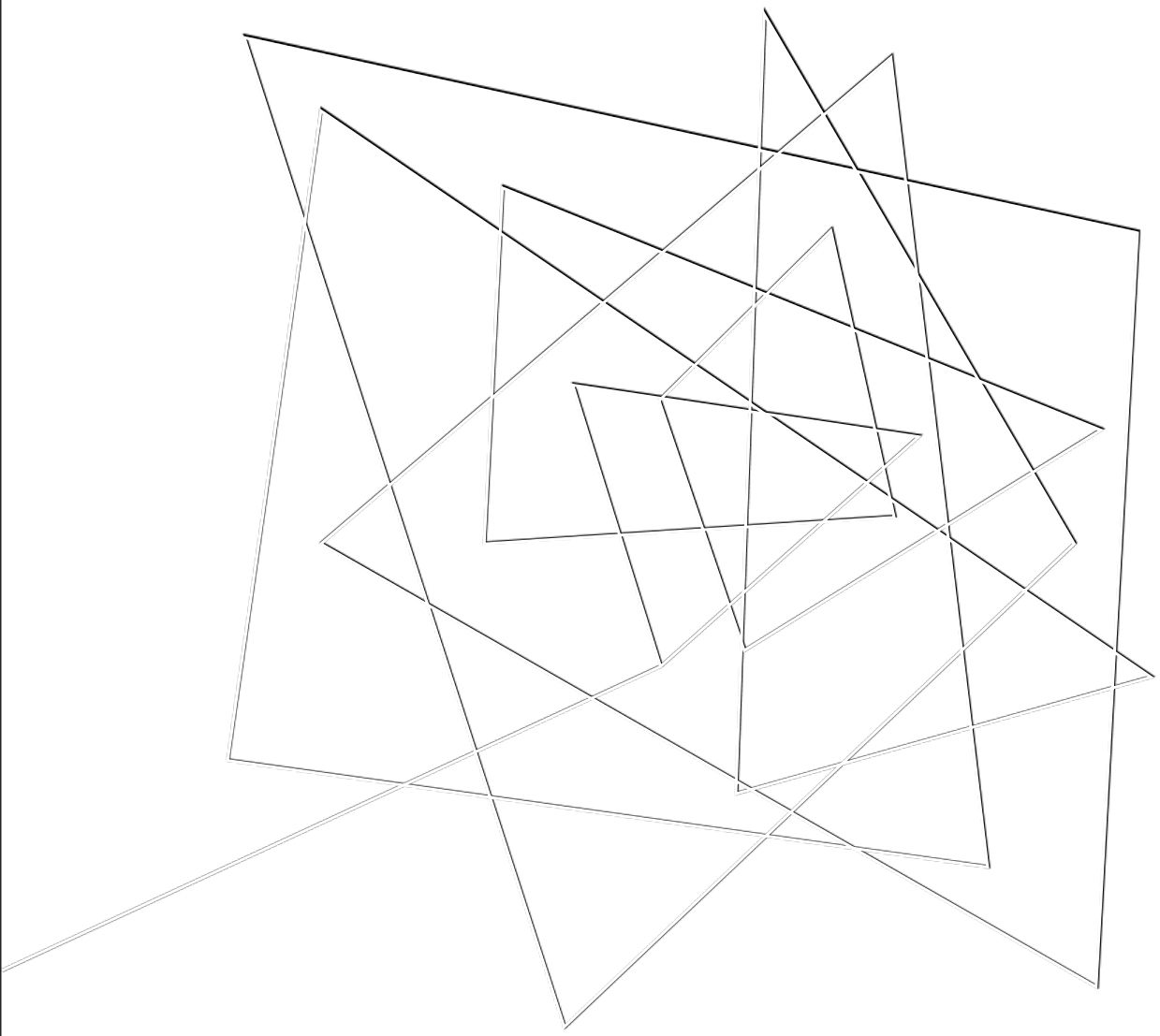
TODAY'S DEMO

Dispense Mechanism and Storage

Requirements: Drop system, storage compartments with funnel, 2 different pills minimum, correct amount of pills dropped

Constraints: Power Consumption, Motor Accuracy, Pill Dispensing Accuracy

Success: Correct pills and amount dispensed, motor efficiently moves, storage dispenses pills smoothly



DEMO TIME

TECHNICAL DETAILS

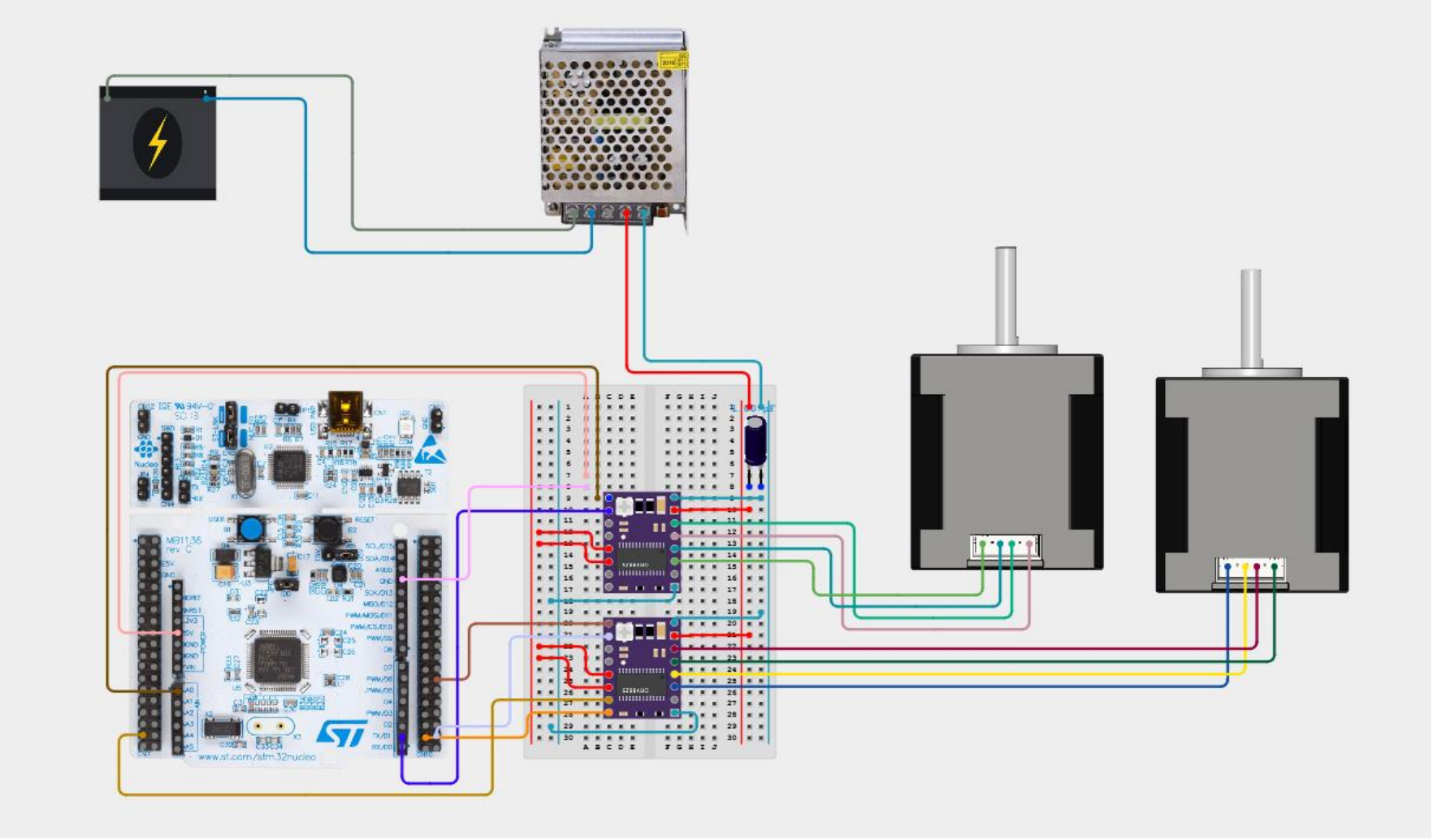
```
/* Variables for position control */
uint8_t current_position = 0;
uint8_t target_position = 0;
uint8_t direction = 0;
uint8_t rxData;
uint8_t pill_count = 0;
char user_type_prompt[] = "Choose user or staff by clicking 1 or 2: ";
char user_id_prompt[] = "Please enter your user ID: ";
char invalid_id_msg[] = "Invalid user profile. Please re-enter your user ID.\r\n";
char welcome_msg[] = "Welcome, ";
char position_prompt[] = ", what pill would you like to request? Pill 1, Pill 2, Pill 3 or Pill 4?: ";
char count_prompt[] = "Enter number of pills (1-9): ";
char newline[] = "\r\n";
```

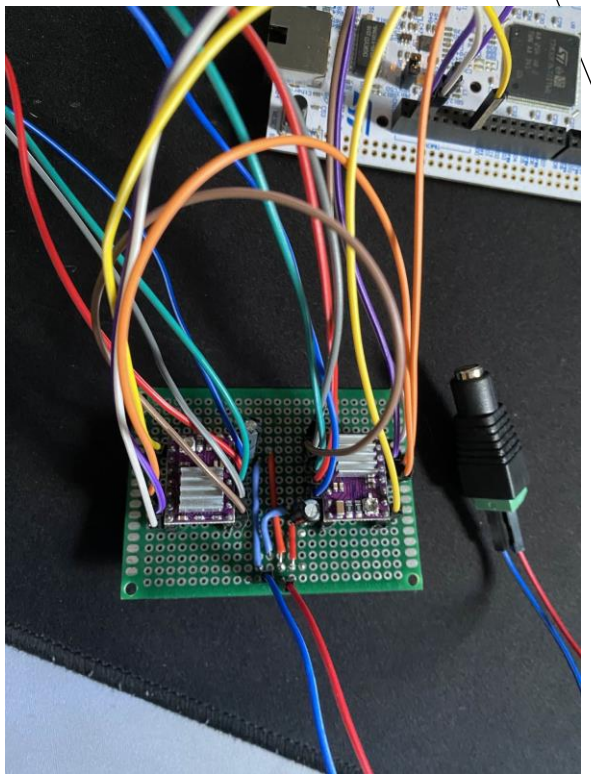
TECHNICAL DETAILS

```
if (current_position == 0)
{
    if (target_position == 1){
        direction = 0;
        HAL_GPIO_WritePin(DIR_GPIO_Port, DIR_Pin, direction);
        HAL_GPIO_WritePin(GPIOB, LD1_Pin, GPIO_PIN_SET);
        HAL_GPIO_WritePin(GPIOB, LD3_Pin, GPIO_PIN_RESET);
        HAL_GPIO_WritePin(Enable_GPIO_Port, Enable_Pin, GPIO_PIN_RESET);
        HAL_TIM_PWM_Start(&htim2, TIM_CHANNEL_1);
        HAL_Delay(1000);
        direction = 1;
        HAL_GPIO_WritePin(DIR_GPIO_Port, DIR_Pin, direction);
        HAL_GPIO_WritePin(GPIOB, LD1_Pin, GPIO_PIN_RESET);
        HAL_GPIO_WritePin(GPIOB, LD3_Pin, GPIO_PIN_SET);
        HAL_Delay(1000);
        HAL_TIM_PWM_Stop(&htim2, TIM_CHANNEL_1);
        HAL_GPIO_WritePin(Enable_GPIO_Port, Enable_Pin, GPIO_PIN_SET);
    }
```

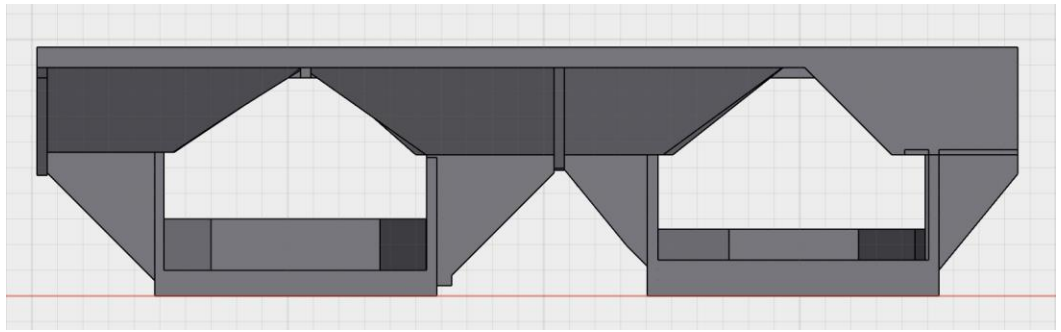
```
else if (target_position == 2){
    direction = 1;
    HAL_GPIO_WritePin(DIR_GPIO_Port, DIR_Pin, direction);
    HAL_GPIO_WritePin(GPIOB, LD1_Pin, GPIO_PIN_RESET);
    HAL_GPIO_WritePin(GPIOB, LD3_Pin, GPIO_PIN_SET);
    HAL_GPIO_WritePin(Enable_GPIO_Port, Enable_Pin, GPIO_PIN_RESET);
    HAL_TIM_PWM_Start(&htim2, TIM_CHANNEL_1);
    HAL_Delay(1000);
    direction = 0;
    HAL_GPIO_WritePin(DIR_GPIO_Port, DIR_Pin, direction);
    HAL_GPIO_WritePin(GPIOB, LD1_Pin, GPIO_PIN_SET);
    HAL_GPIO_WritePin(GPIOB, LD3_Pin, GPIO_PIN_RESET);
    HAL_Delay(1000);
    HAL_TIM_PWM_Stop(&htim2, TIM_CHANNEL_1);
    HAL_GPIO_WritePin(Enable_GPIO_Port, Enable_Pin, GPIO_PIN_SET);
}
```

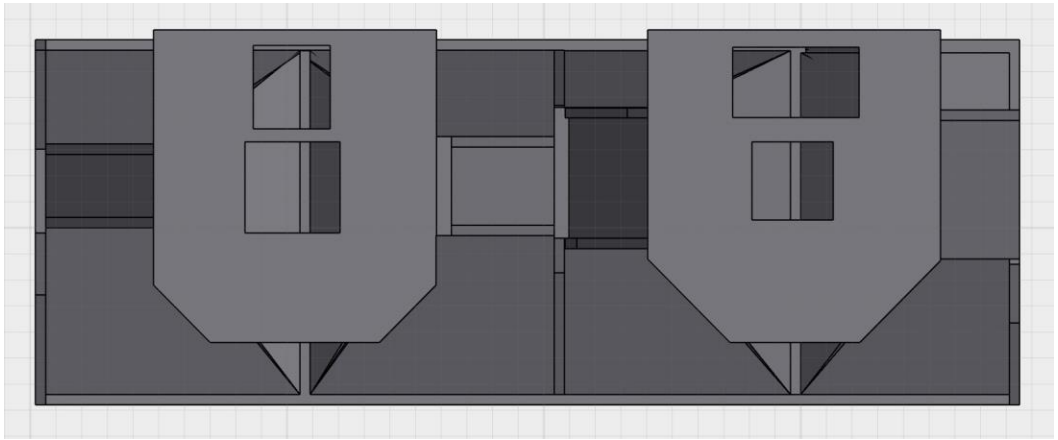
TECHNICAL DETAILS



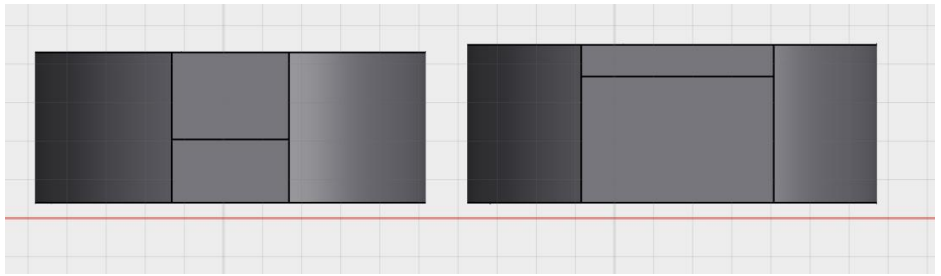


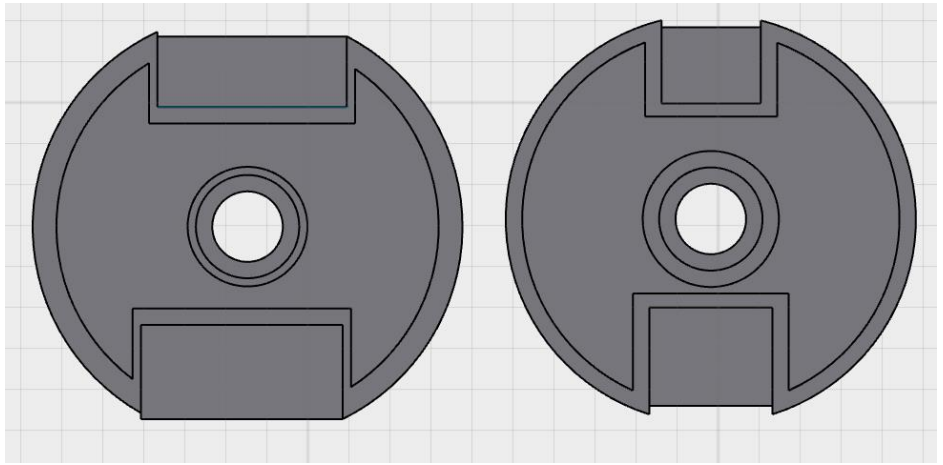
TECHNICAL DETAILS

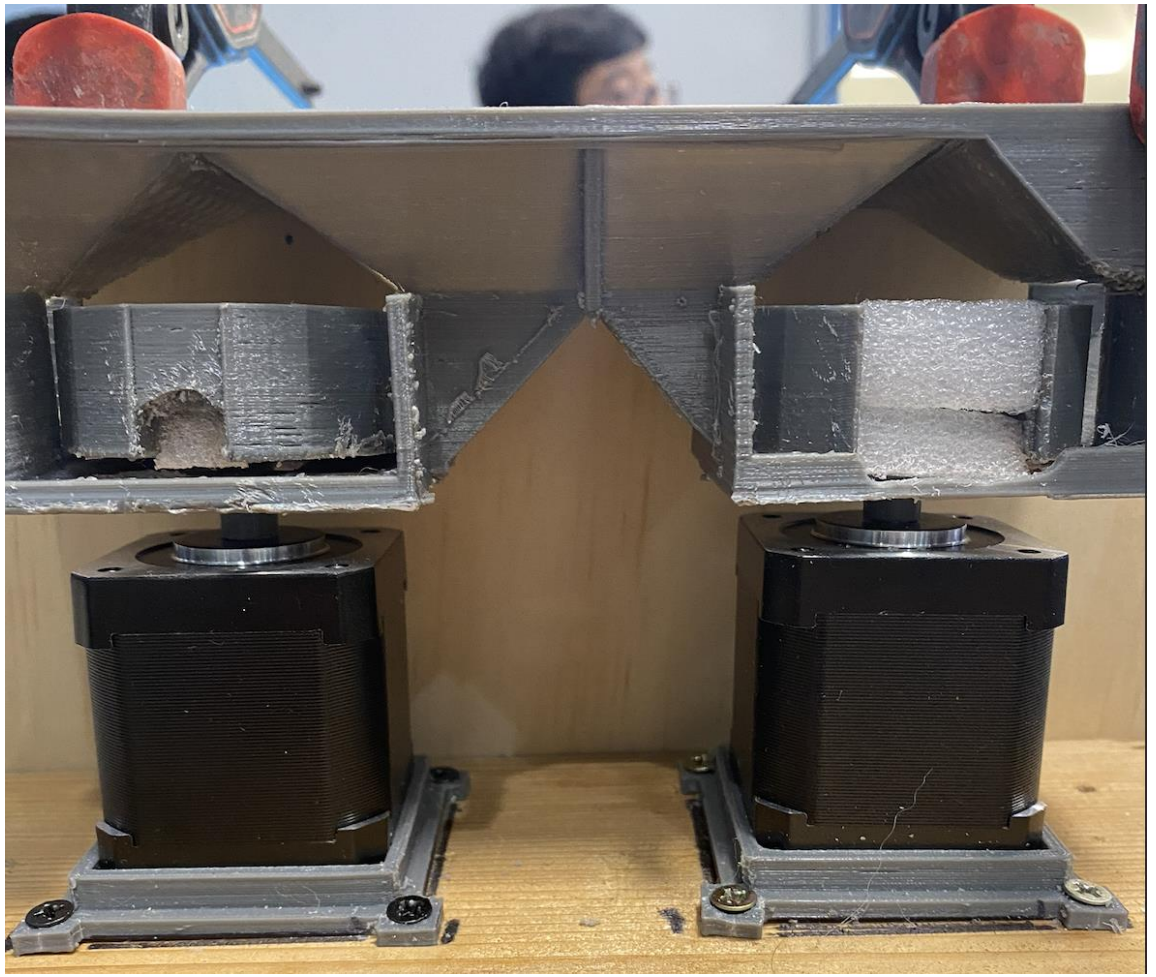




TECHNICAL DETAILS

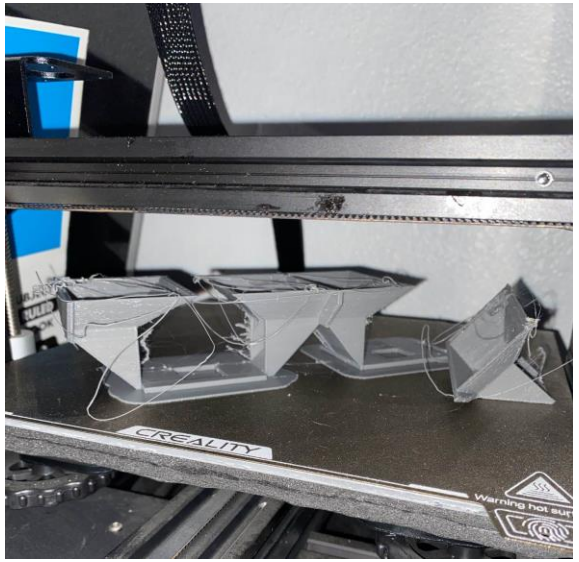






CHALLENGES

Printing time



Pocket refill

Printing Dimensions

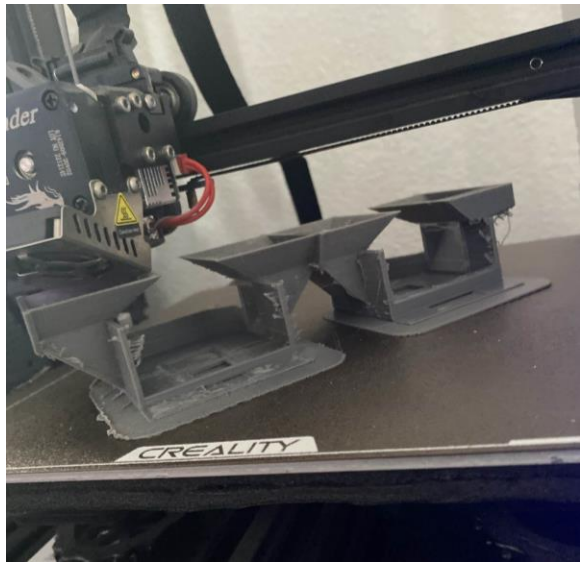
OVERCOMING CHALLENGES

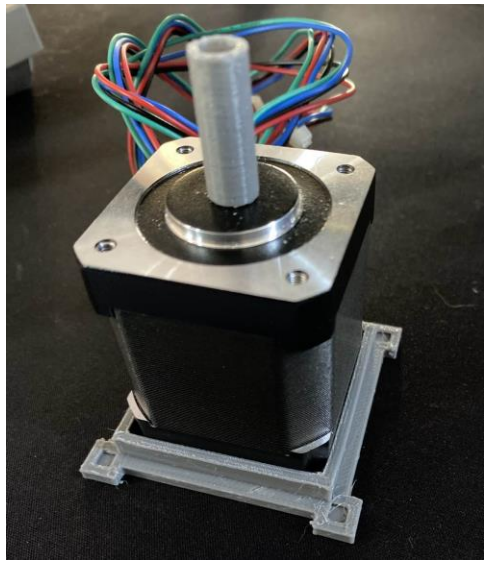
Printing Time

- Redesign pocket and storage to lower material and time required without compromising the stability of the design. Simplifying the design, making it easier to recreate/expand on for later demos.

Pocket refill

- So we don’t have to reprint too many times, we decided to have the funnel and pocket be open to customize based on the pill we will test. Pockets will be replaceable depending on the pill.



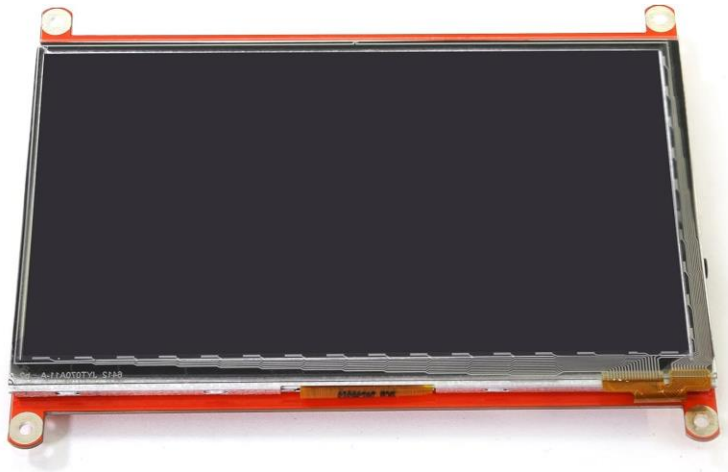


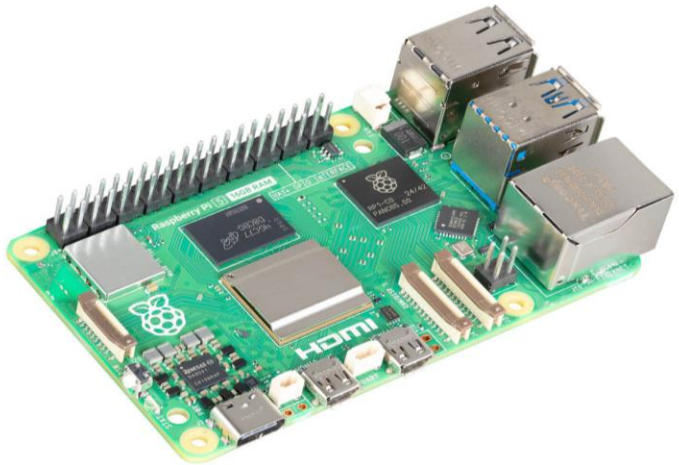
NEXT DEMO

DISPLAYING USER INTERFACE

Requirements: Touchscreen LCD Display, Raspberry Pi 5

Success: Responds accurately and consistently, Terminal displays correctly on the LCD





THANK YOU