

POTTERY CUPS Machine

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Idea & Overview:

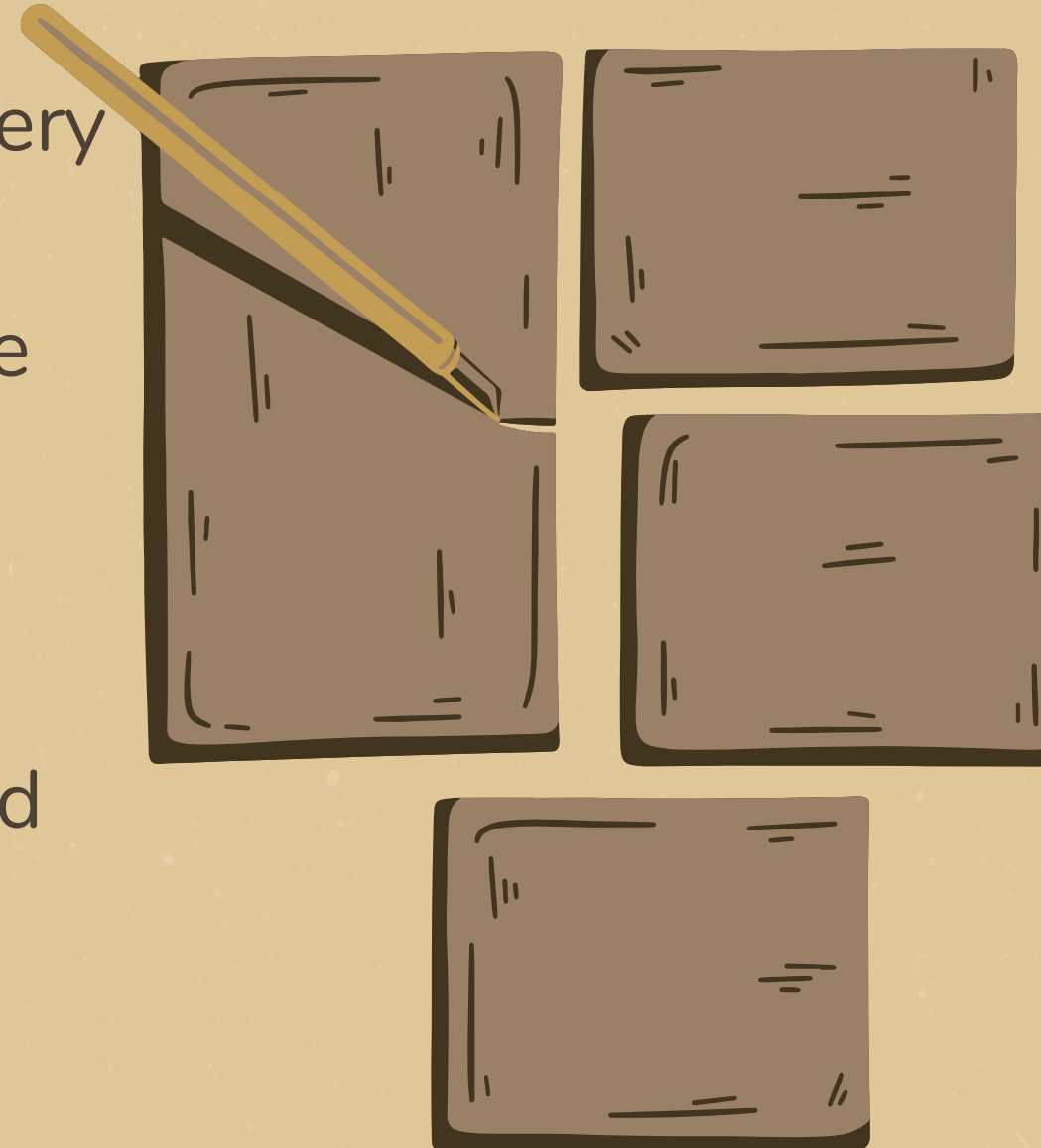
Pottery Cup Production Automation

- Modernizing traditional pottery cup production with automation for efficiency & consistency.
- Reduces reliance on skilled labor and minimizes human errors.
- Uses an Arduino-based system with sensors, motors, and wireless control.
- First of its kind in Palestine, merging traditional craftsmanship with modern technology



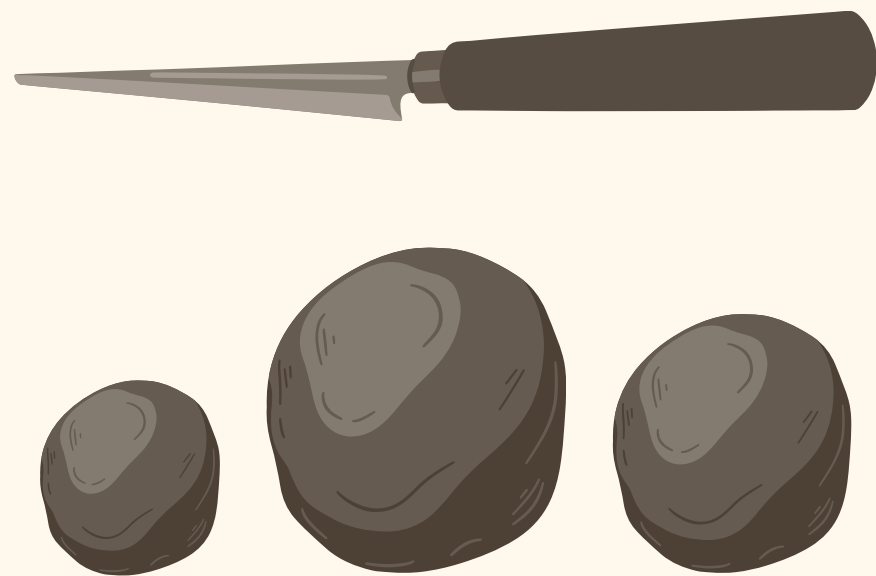
Objectives:

- Develop an automated system for pottery cup production.
- Ensure high consistency & quality while reducing production time & cost.
- Maintain artisanal craftsmanship with modern automation
- Allow user control via keypad, LCD, and mobile app (ESP32 module)



Features & Methods

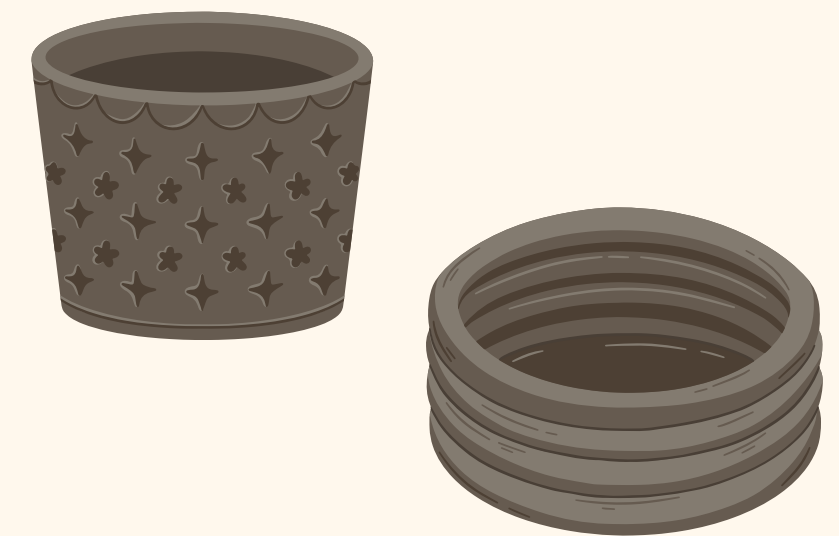
1. Clay Cutting



2. Clay Molding



3. Design the Cup



Clay Cutting:

The system precisely cuts and measures the required amount of clay before molding.



Components used:



DC Motor with Gearbox



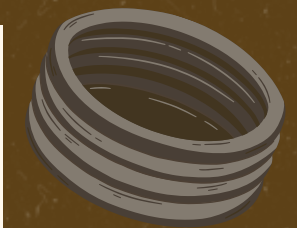
Limit Switch



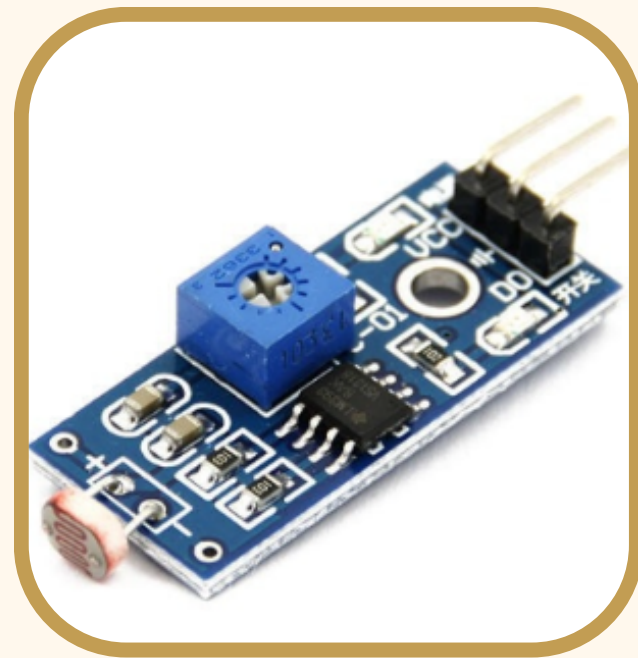
Servo Motor

Clay Molding

The machine moves on to shape the clay into a cup using a compression mechanism.



Components used:



LDR Module



Laser Diode



Bearing

Components used:



Lead Screws & Stepper Motors Nema23



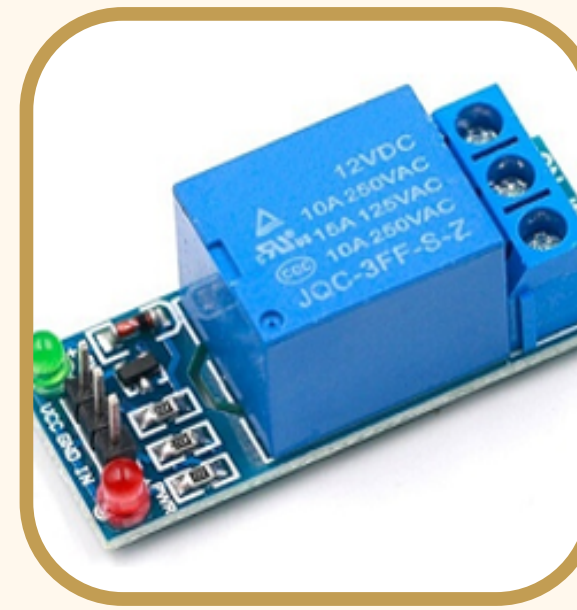
Rods with Linear Bearing



Relay & Pressing Motor

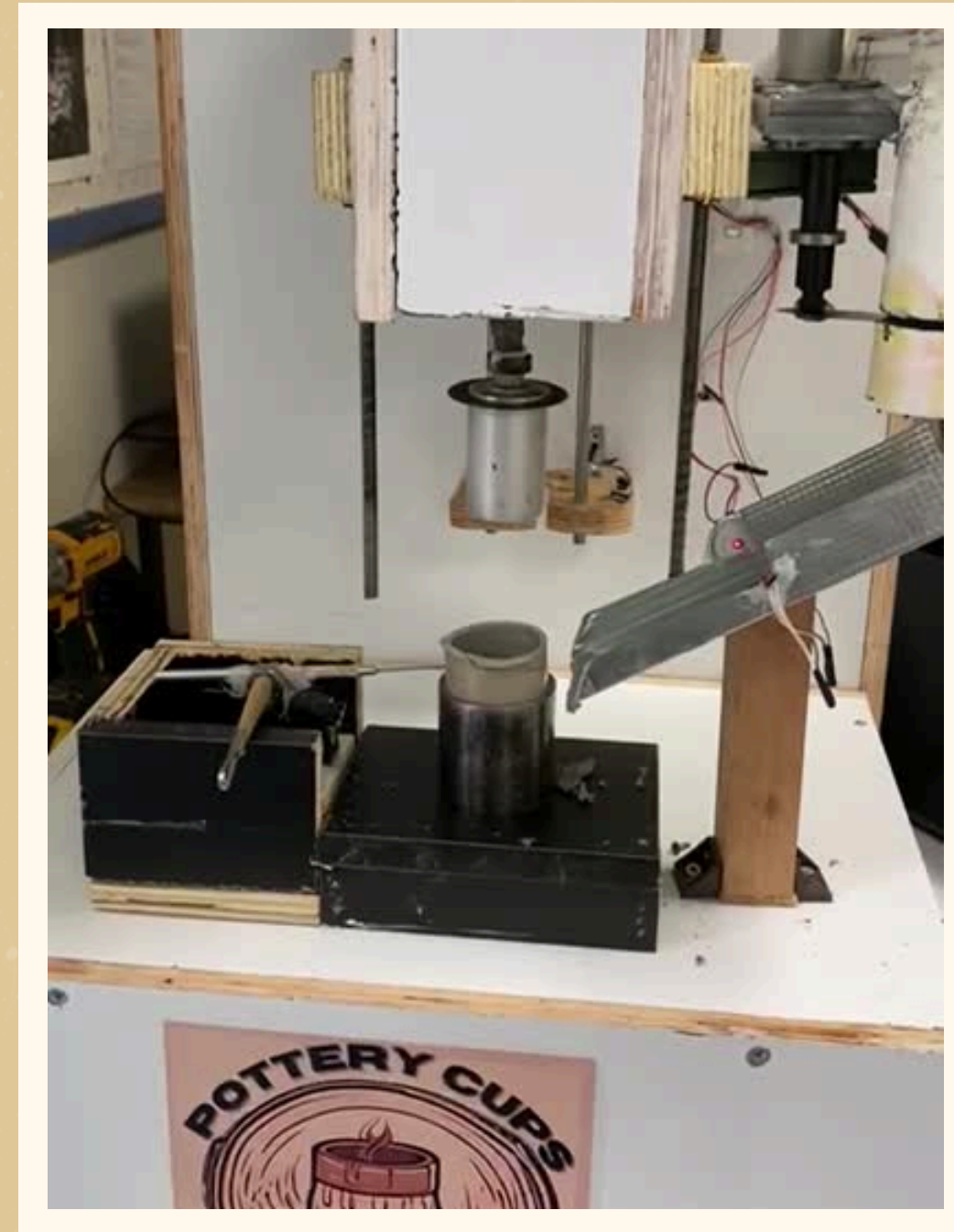


Ultrasonic & Push Buttons



Design the Cup

The machine integrates a carving tool for adding design to the cup.



Components used:



Leadscrew



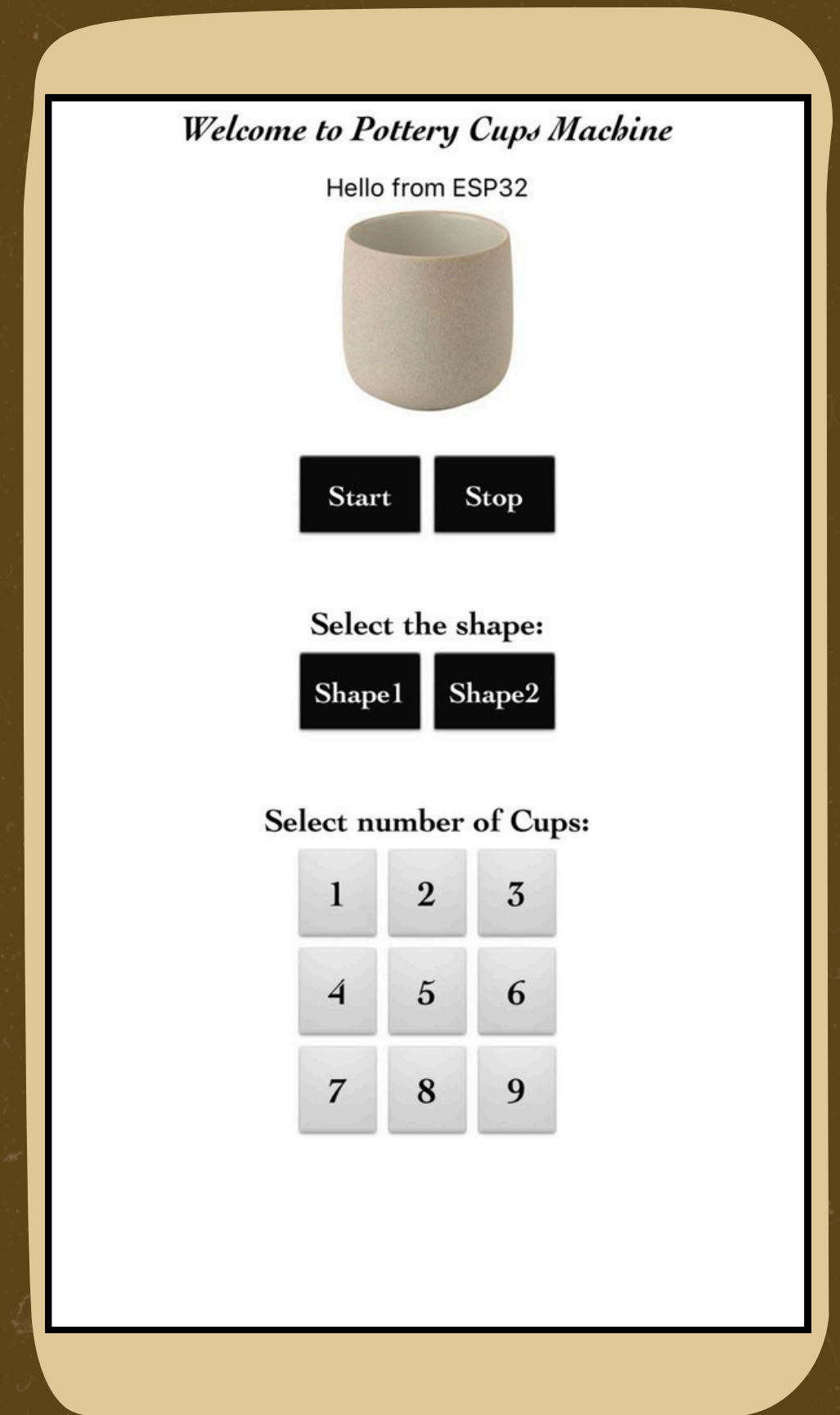
Stepper Motor
Nema 23



Servo Motor

Mobile Application

- The ESP32 microcontroller connects to the mobile app via Wi-Fi.
- Users select the cup shape and desired quantity from the interface.
- The command is sent to the machine, which automates the cutting, pressing, and carving process accordingly.
- The machine starts/stops production based on user input.



Constraints



1. Motor Selection and Force Calculation.
2. Components Very Highly Priced.
3. Clay Consistency and Preparation.
4. Structural Durability and Mechanical Stability.
5. Automation Complexity.

Future Work

1. Possibility of coloring and Painting pottery cups
2. Automatic Oil Spraying Tool
3. Inclusion of a Kneading machine



THANK YOU!

