CAPSTONE PROJECT

GROUP 8

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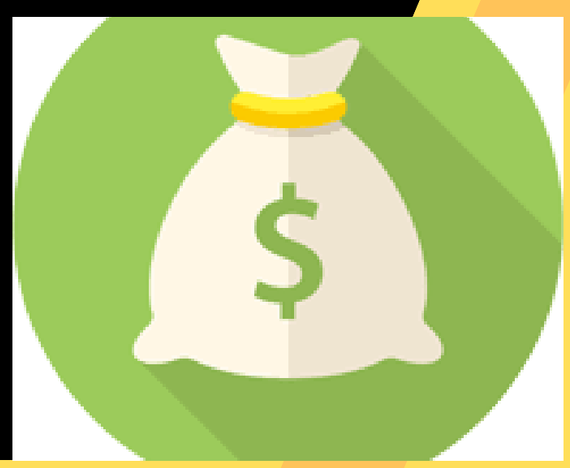
LONELY CHAMPION WINNER (LCW)

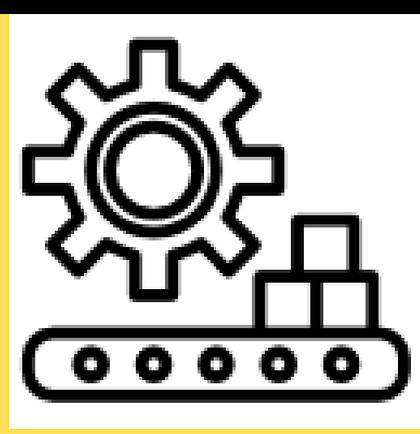
BADMINTON ROBOT TRAINER

PROJECT VIABILITY

SUSTAINABILITY

ECONOMICAL





MANUFACTURABILITY

PROTOTYPE

LONELY CHAMPION WINNER (LCW)

TYPE OF SHOTS

- Front left
- Front centre
- Front right
- High rear left
- Centre (High ball)
- High rear right

PLAYING MODE

Fixed position

- This mode will repeat the shots from front left to high rear right in sequence.

Random position

- This mode will give the shots randomly w/o following the sequence.

TARGETED USER:

Beginner PLayer
Coaches
Court Owner

HARDWARE DESCRIPTION

LOADING CYLINDER
- To store and hold shuttlecocks

SLIDER
- As a guidance to let shuttlecocks fall into desired firing position

FIRING SERVO
- To adjust the firing angle

TOGGLE SWITCH
- To toggle between fixed mode and random mode

POWER SUPPLY
- To provide sufficient power to DC motors

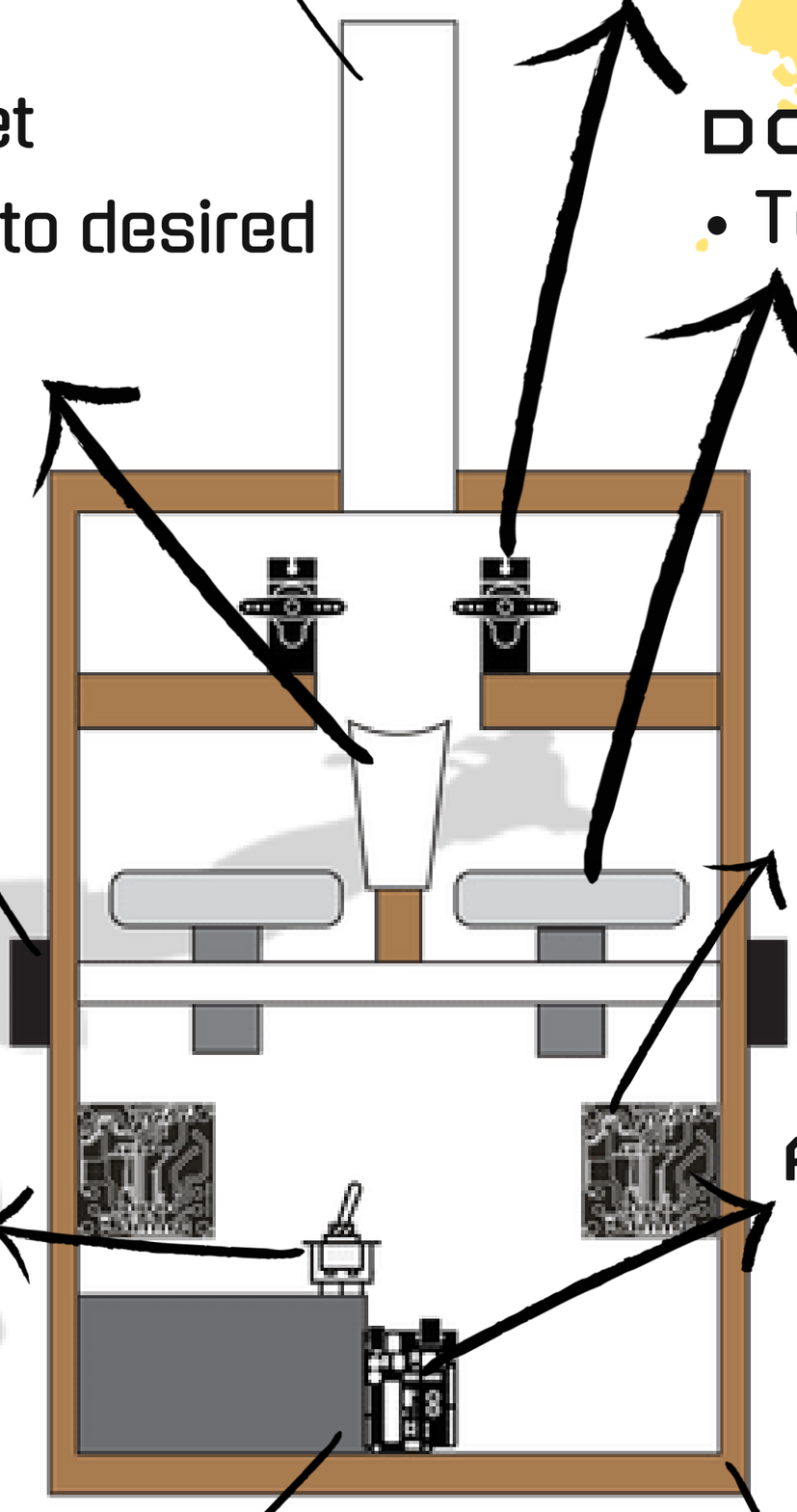
FEEDING SERVO
- To feed shuttlecocks in the loading cylinder into slider and firing mechanism

DC MOTOR + WHEEL
- To provide firing mechanism

MOTOR DRIVE
- To control firing speed by adjusting voltage input of DC motor through PWM

ARDUINO UNO BOARD
- To control hardware from its I/O ports based on the uploaded program

CASING
- To protect the hardware and circuits as well as to hold them in positions



SOFTWARE DESCRIPTION

PROGRAMMING LANGUAGE:

- C and C++

SOFTWARE USED:

- Arduino IDE

ARDUINO

LIBRARY USED:

CytronMotorDriver.h library

- To provide functions for Cytron motor drivers. It uses PWM and DIR pins to drive and control the motor's speed

Servo.h library

- To allow an arduino board to control RC (hobby) servo motors

FUNCTIONS INVOLVED:

shootFix()

- To provide fix pattern shot

shootRandom()

- To provide randomized shot

feed()

- To feed the shuttlecocks

FLOWCHART

START

POWER SUPPLY TURNED ON

SHUTTLECOCK RELOADED

MODE?

RANDOM

GENERATE RANDOM FIRING POSITION FROM NUMBER 1 TO 6

ADJUST VERTICAL ANGLE, ROTATING SPEED OF DC MOTORS

SHUTTLE RELEASED

ROLLER WHEELS TURNED ON

SHUTTLECOCKS LAUCNHED AT THE OPPOSITE COURT W/O FOLLOWING THE SEQUENCE 1 TO 6

FIXED

GGENERATE SEQUENCE FIRING POSITION FROM NUMBER 1 TO 6

ADJUST VERTICAL ANGLE, ROTATING SPEED OF DC MOTORS

SHUTTLE RELEASED

ROLLER WHEELS TURNED ON

SHUTTLECOCKS LAUCNHED AT THE OPPOSITE COURT FROM FRONT LEFT TO HIGH REAR RIGHT IN SEQUNECE

1. Front Left
2. Front Centre
3. Front Right
4. High Rear Left
5. Centre (High ball)
6. High Rear Right

END