CRI Project
Cube for disabled people

Noam & Jae Wook

Cube fitting program for people who have numb muscles or can't lift heavy objects

Draft

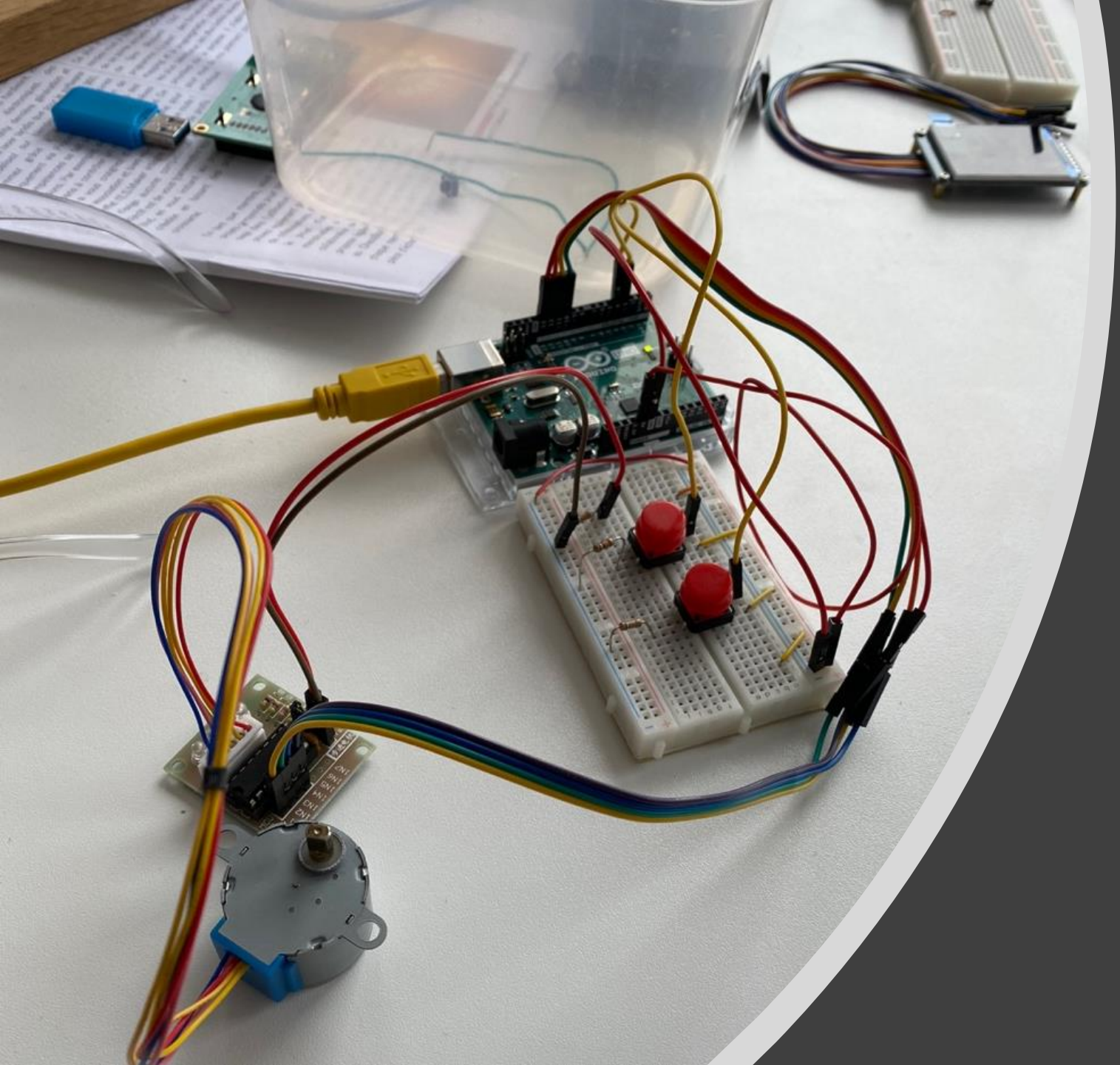
What are some ways to use Arduino for Disabled People?

What is a practical product for people who are not strong or holding things?

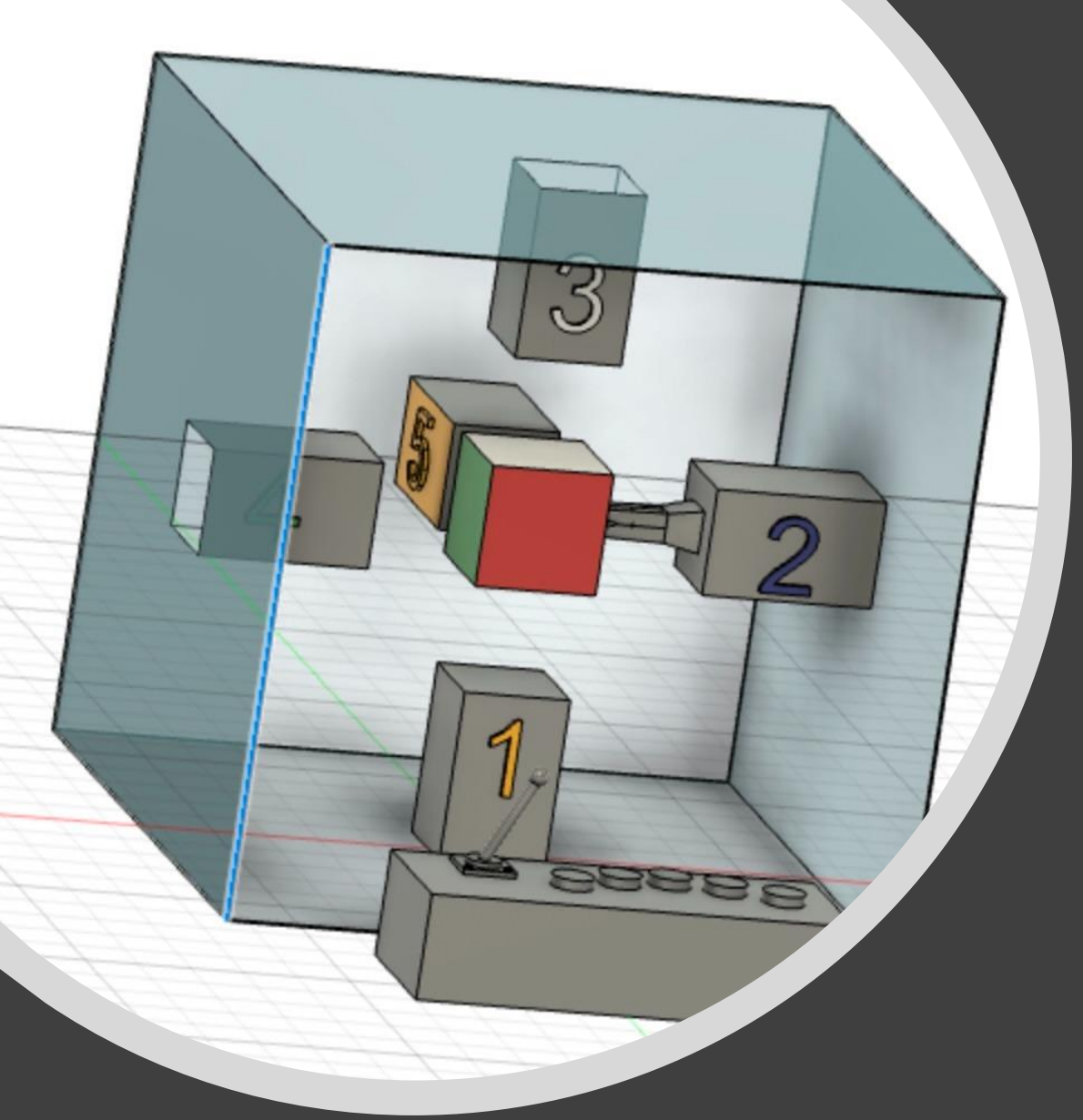
Is there a way to move a 3x3 cube with just a button?

Is there a way to turn a cube by combining a battery and motor, including an existing Arduino?

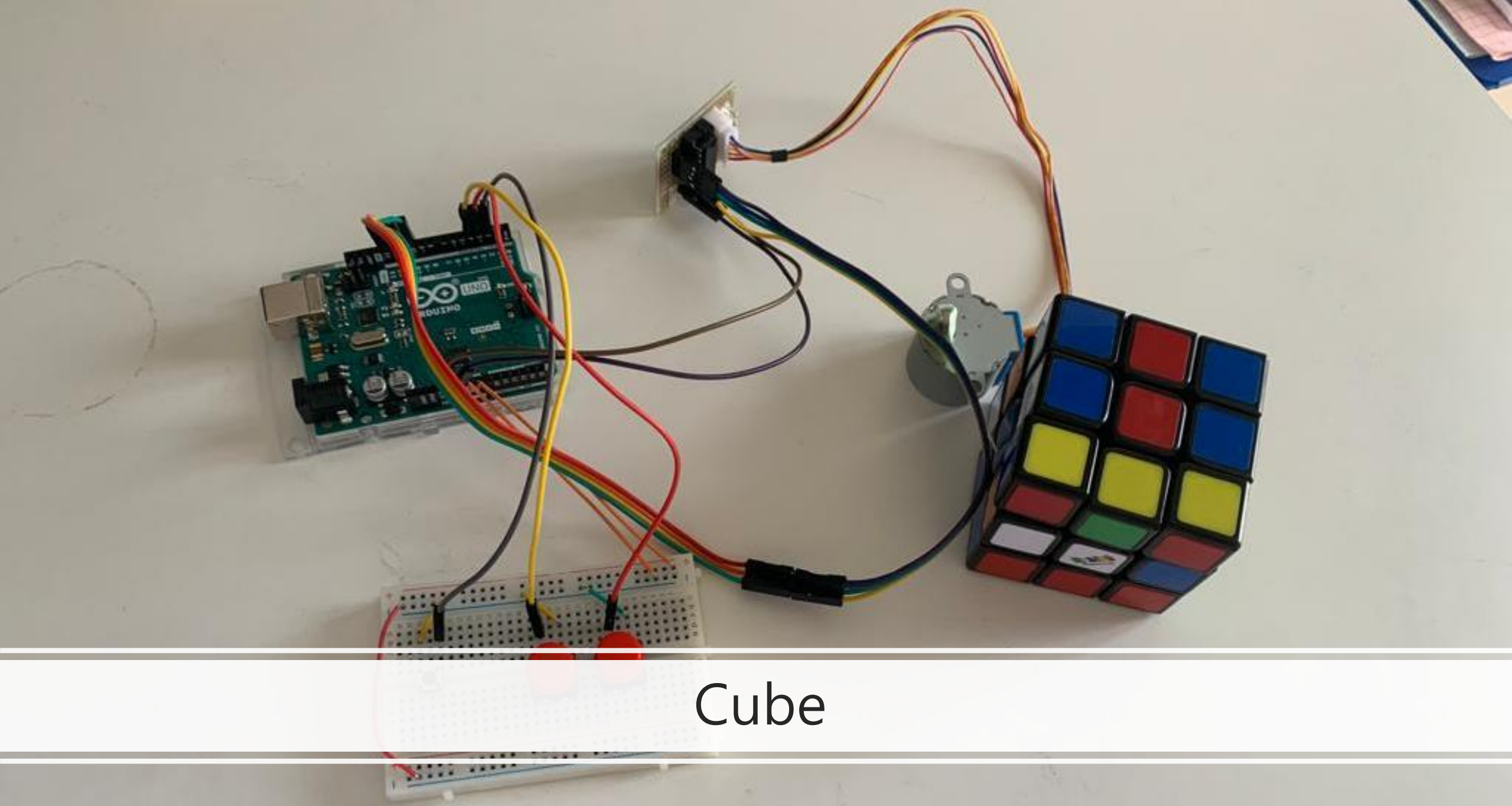
Etc.



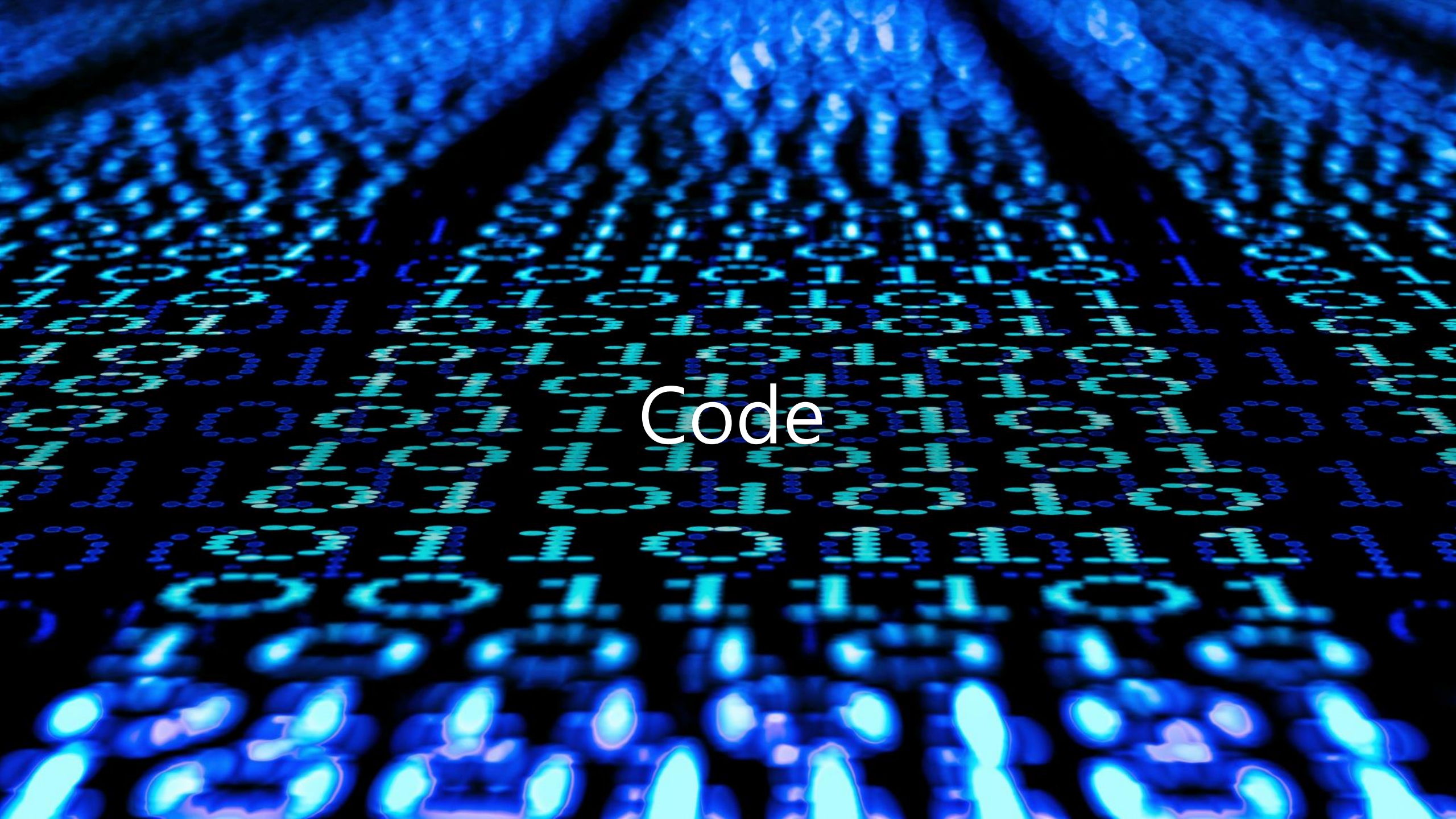
Process



- Use Fusion360 to construct a design that can r otate a cube
- Using a ‘Motor’ to turn the cube
- Using the Arduino button, configure one to ro tate one side of the cube and the other to rot ate one row of cubes



Cube


Code

```
int Pin1 = 10;
int Pin2 = 11;
 int Pin3 = 12;
 int Pin4 = 13;
int switchSTOP =2;
int switchCW    =3;
int switchCCW   =4;
int speedFactor =1;
//1=fastest, 2=slower or 3 more
slowerlong goToAngle = 90;
int correction_CW = 150;
int correction_CCW = 150;
const int CW =1;const int CCW =2;const
int STOP =3;int poleStep = 0; long
stepVale =0;const int SPR=64*64;int
pole1[] ={0,0,0,0, 0,1,1,1, 0};//pole1, 8 step
valuesint pole2[] ={0,0,0,1, 1,1,0,0,
0};//pole2, 8 step valuesint pole3[]
={0,1,1,1, 0,0,0,0, 0};//pole3, 8 step
valuesint pole4[] ={1,1,0,0, 0,0,0,1,
0};//pole4, 8 step valuesint count=0;int
dirStatus = STOP;void setup()
{      Serial.begin(9600);}}
```

- pinMode(Pin1, OUTPUT);
- //define pin for ULN2003 in1 pinMode(Pin2, OUTPUT);
- //define pin for ULN2003 in2 pinMode(Pin3, OUTPUT);//define pin for ULN2003 in3 pinMode(Pin4, OUTPUT);//define pin for ULN2003 in4 pinMode(switchSTOP,INPUT_PULLUP); pinMode(switchCW,INPUT_PULLUP); pinMode(switchCCW,INPUT_PULLUP); } void loop() { stepVale = (SPR * goToAngle)/360 ;
- if(digitalRead(switchCCW) == LOW) { dirStatus =CCW; count =0; }else if(digitalRead(switchCW) == LOW) { dirStatus = CW; count =0; } if(digitalRead(switchSTOP) == LOW) { dirStatus = STOP; delay(200); } if(dirStatus ==CCW){ poleStep++; count++; if(count+correction_CCW <= stepVale) {
- driveStepper(poleStep); }else{ driveStepper(8); } }else if(dirStatus ==CW){ poleStep--; count++; if(count+correction_CW <=stepVale)
{ driveStepper(poleStep); }else{ driveStepper(8); } }else{ driveStepper(8); } if(poleStep>7){ poleStep=0; } if(poleStep<0){ poleStep=7; } delay(speedFactor); }// loopvoid driveStepper(int c){ digitalWrite(Pin1, pole1[c]); digitalWrite(Pin2, pole2[c]); digitalWrite(Pin3, pole3[c]); digitalWrite(Pin4, pole4[c]); if(c ==8) { digitalWrite(switchCW, HIGH); digitalWrite(switchCCW, HIGH);