# MECH423 Final Project FanFaceTracker

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## Link:

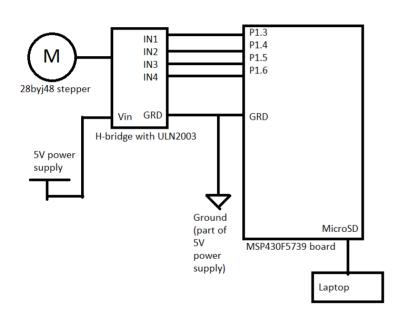
https://github.com/rprakitpong/fanfacetracker https://www.youtube.com/watch?v=s85OwPzjlDE

### Mechanical



- Motor shaft connected to pinion
- Circular rack glued to turntable
- Fan and camera sit on turntable
- Jury rigged with home equipment and 3D printing

## **Electrical**



- Receives byte via UART
- Difference between byte and 127 is used as step count and direction for motor movement
- Similar to exercise 2 of lab
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## Software

```
# set up machine
machine = Machine()
app = GUIcontroller(machine)
# set up CVController
cv = CVcontroller(machine)
    # update CV
    cv.update()
    # update machine
    machine.update()
    # update gui
    app.update()
    # get out of loop, press 'ESC' to quit
    k = cv2.waitKey(30) & 0xff
    if k == 27:
        break
# end camera
cv.end()
# end machine communication
machine.end()
# end tkinter window
app.end()
```

- Machine: serial communication class using serial with sendCommand(value) method to move motor
- GUIcontroller: GUI class using tkinter displaying angular displacement and has buttons to move motor
- Cvcontroller: CV class using cv2 getting image from camera and moves motor till face (if in frame) is centered in frame
- Functionalities neatly encapsulated into classes

#### **Interactions**

Angular location of turntable

#### **GUIcontroller**:

- Display current location
- Button send displacement

#### CVcontroller:

- Process image and get face
- Send displacement based on how far face is from center

#### Machine:

- Send displacement to MCU via UART
- Receive flag when movement is done
  - Keep track of location

MCU/motor:
- Takes value
and make
10n steps

Fan assembly:
- Pinion on
motor shaft
turns rack
on turntable

Image from camera ◀