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import array
import math
import board
import audiobusio
import time
from adafruit_featherwing import neopixel_featherwing

neopixel = neopixel_featherwing.NeoPixelFeatherWing()

def mean(values):
    return sum(values) / len(values)

def normalized_rms(values):
    minbuf = int(mean(values))
    samples_sum = sum(
        float(sample - minbuf) * (sample - minbuf)
        for sample in values
    )

    return math.sqrt(samples_sum / len(values))

mic = audiobusio.PDMIn(board.TX, board.D12, sample_rate=16000, bit_depth=16)
samples = array.array('H', [0] * 160)

# Clear the screen
neopixel.fill()

# Start the Animation
neopixel.auto_write = False
while True:

    mic.record(samples, len(samples))
    magnitude = normalized_rms(samples)

    if magnitude < 250:
        # No noise, turn off the display
        neopixel.fill((0, 0, 0))
    elif magnitude < 500:
        # Little noise, display yellow
        neopixel.fill((255, 255, 0))
    elif magnitude < 1500:
        # Some noise, display orange
        neopixel.fill((255,60,0))
    else:
```

```
    # A lot of noise, display red
    neopixel.fill((255, 0, 0))

neopixel.show()
```