



# Determining Covid-19 Hot-spots

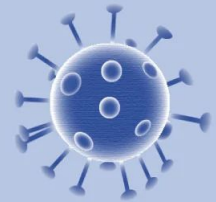
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# Concept

- Poor ventilation increases transmission of viruses. (Courtesy WHO studies)
- CO2 Levels in a room indicate quality of ventilation.
- Therefore, CO2 Levels correlates to the density of viral particles, including Covid-19.
- It would be useful to have a simple tool to ballpark building ventilation, and assess risk.



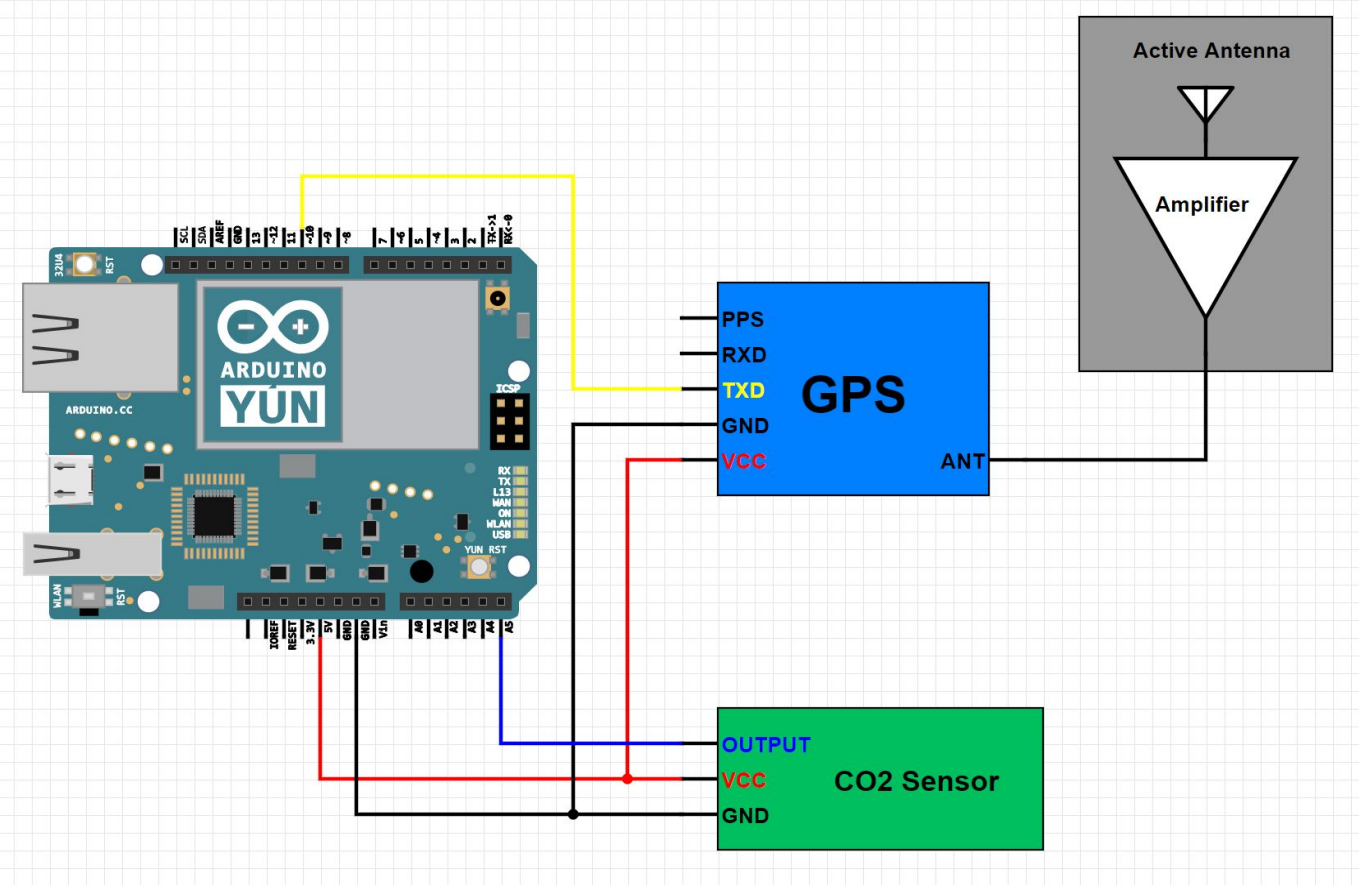
Poor Ventilation



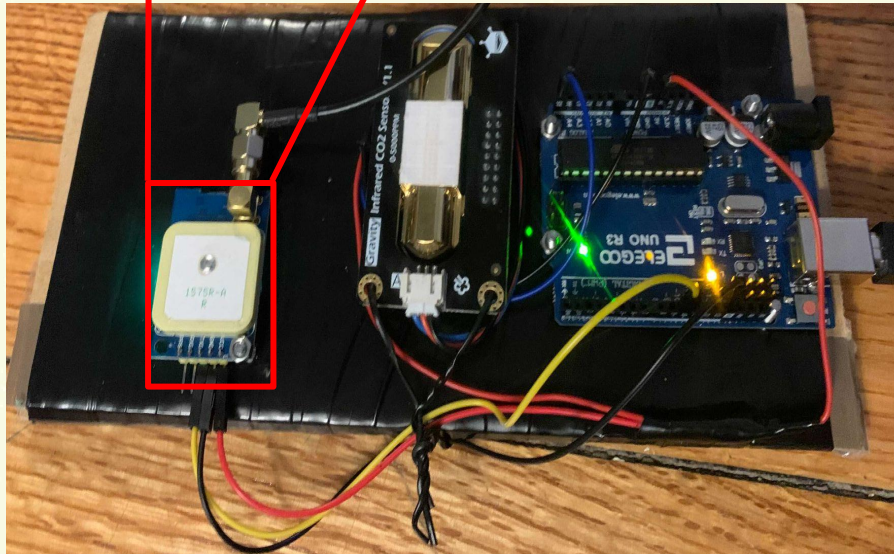
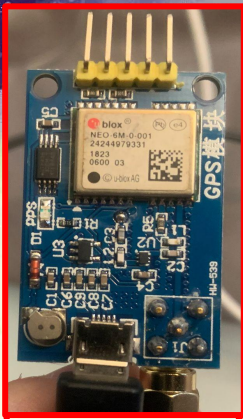
Increased Virus  
Transmission



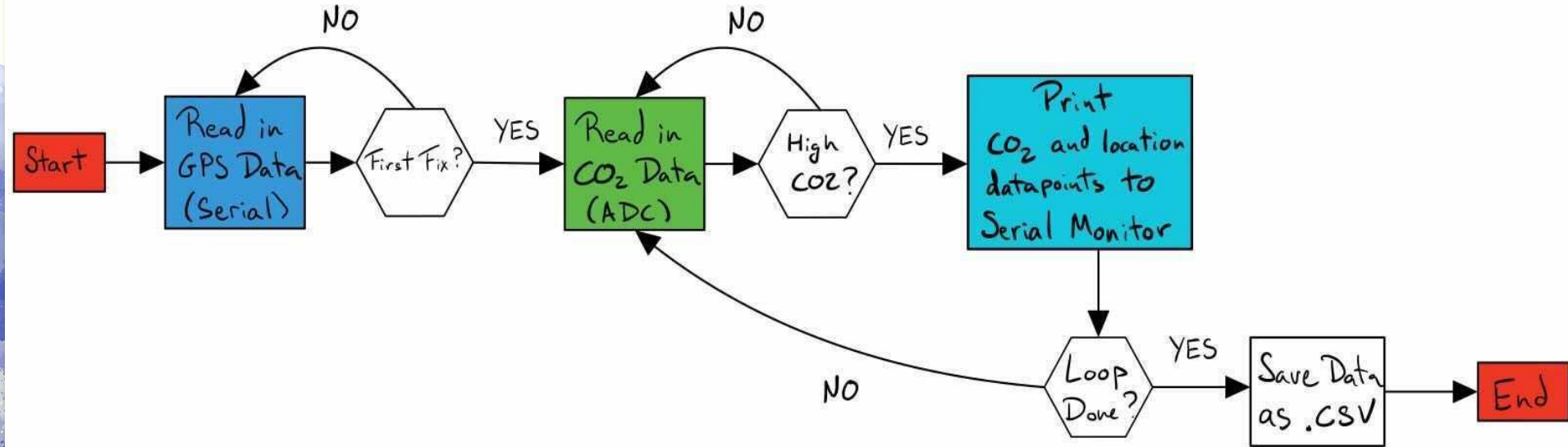
# Schematic Diagram



# Physical Setup



# Flow Chart



- .CSV file can be imported into google maps to see a CO2 heatmap.

# Slide For Google Maps Output

My Output:

```

17:09:40.402 -> CO2 Concentration [ppm]:
17:09:40.449 -> 535.2783203
17:09:40.449 -> Latitude:
17:09:40.449 -> 42.3514633178
17:09:40.496 -> Longitude:
17:09:40.496 -> -71.1289215087
17:09:40.496 ->
17:09:41.434 -> CO2 Concentration [ppm]:
17:09:41.480 -> 550.5371093
17:09:41.480 -> Latitude:
17:09:41.527 -> 42.3514633178
17:09:41.527 -> Longitude:
17:09:41.527 -> -71.1289215087
17:09:41.573 ->
17:09:42.512 -> CO2 Concentration [ppm]:
17:09:42.512 -> 520.0195312
17:09:42.512 -> Latitude:
17:09:42.559 -> 42.3514633178
17:09:42.559 -> Longitude:
17:09:42.559 -> -71.1289215087
17:09:42.606 ->
17:09:43.543 -> -----Set Done-----
    
```

U-Center Output:

The screenshot displays a software interface with several panels:

- Top Left:** A compass showing a heading of 216.23 deg.
- Top Middle:** A bar chart showing CO2 concentration data points: 1931, 1623, 2636, 6131, 4292, 410. Below the chart is a data string: G1G3G6T1G1G1923242428301B.
- Top Right:** A status panel with the following data:
 

Longitude	-71.12894000°
Latitude	42.35201183°
Altitude	-19.800 m
Altitude (msl)	13.400 m
TTF	
Fix Mode	3D
3D Acc. [m]	0 14.7 50
2D Acc. [m]	
PDOP	0 12.1 10
HDOP	0 1.3 10
Satellites	10
- Middle Left:** A list of sensor data for various sensors (e.g., GPS01, GPS02, etc.) with their respective CO2 concentration readings.
- Middle Right:** A world map showing the current location with a red dot and a circular inset map showing a zoomed-in view of the location.
- Bottom Left:** A speedometer showing 0.03 m/s = 0.1 km/h.
- Bottom Middle:** A clock showing 19:26:37 UTC on Wednesday, 04/28/2021.
- Bottom Right:** A world map showing the location of multiple sensors (represented by small icons) across the globe.

The status bar at the bottom of the interface shows: "ected", "u-blox 6", "Disconnected", "No file open", "NMEA", "00:53:02 19:26:37".