

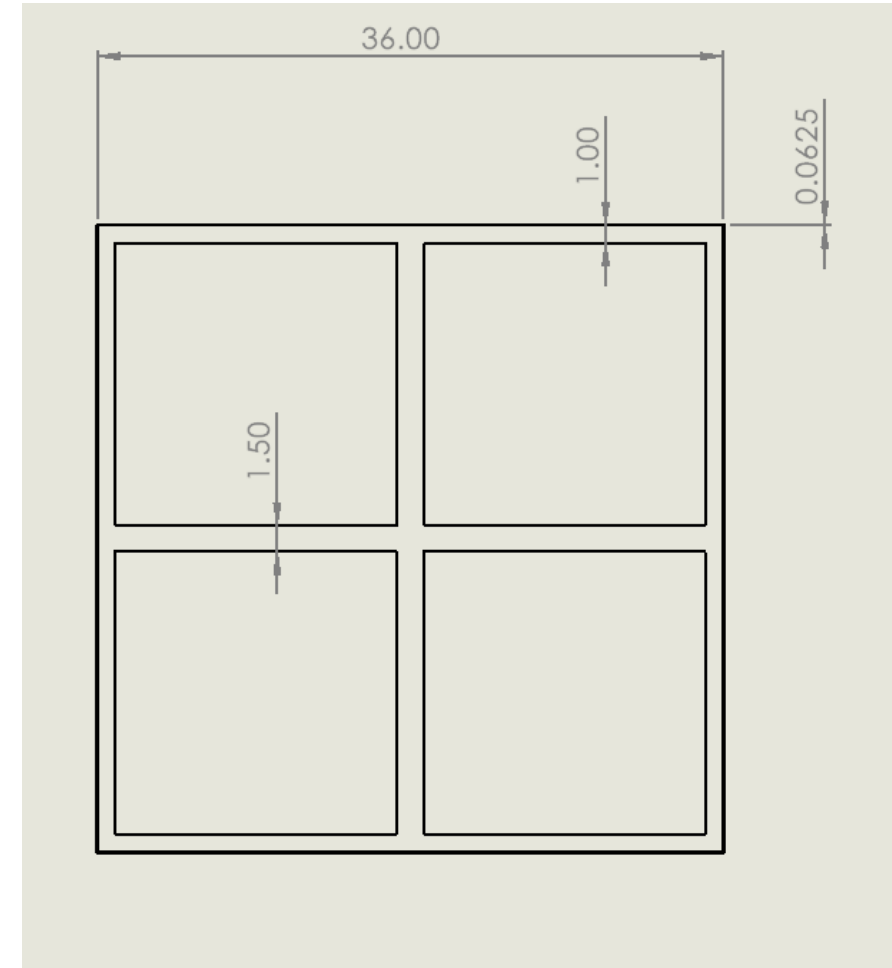
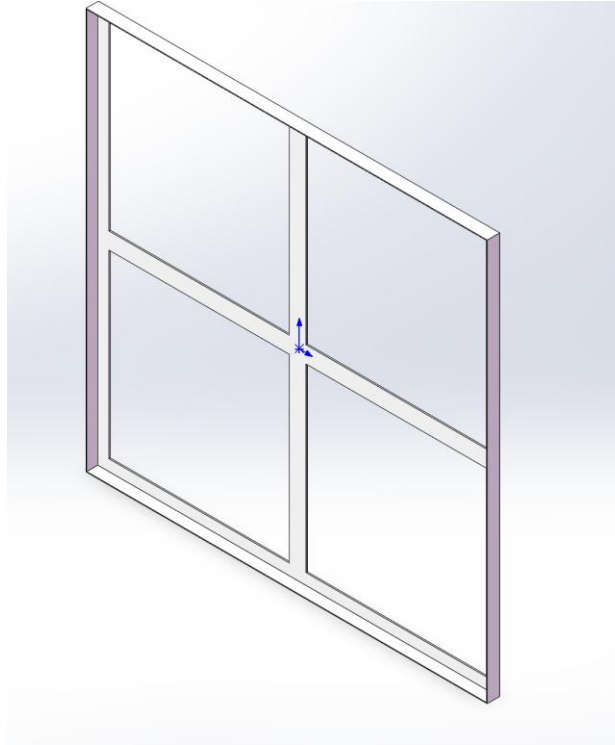
Renewable Energy Lab Weather Station

33%Build Update

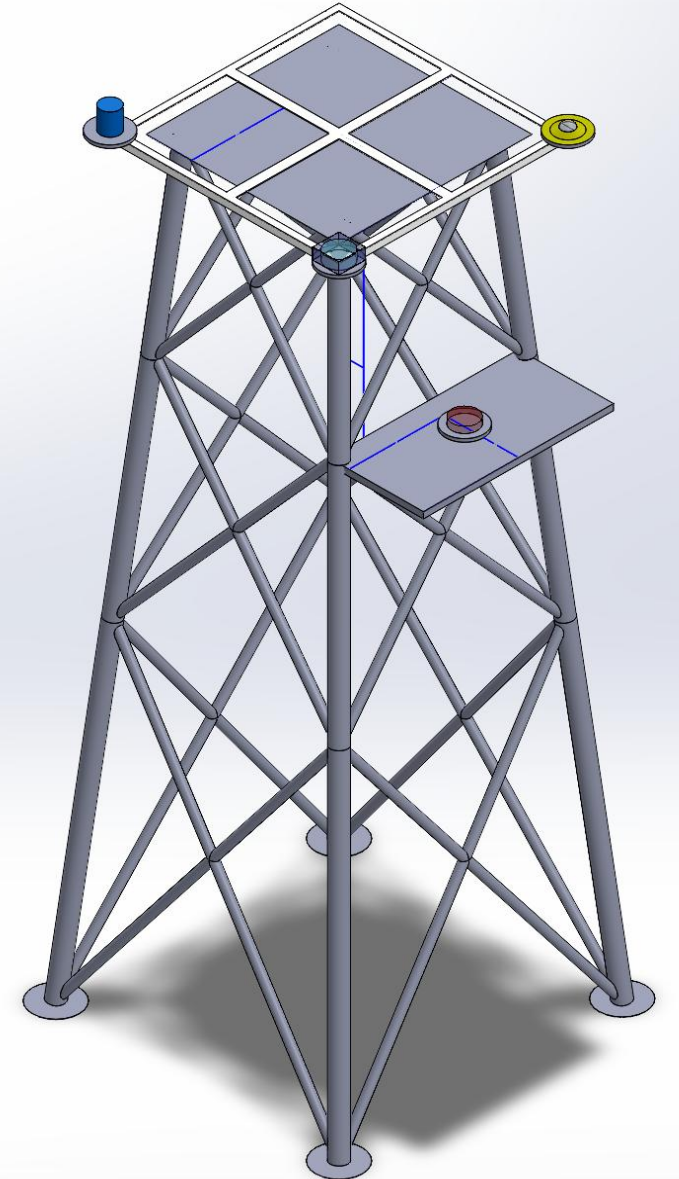
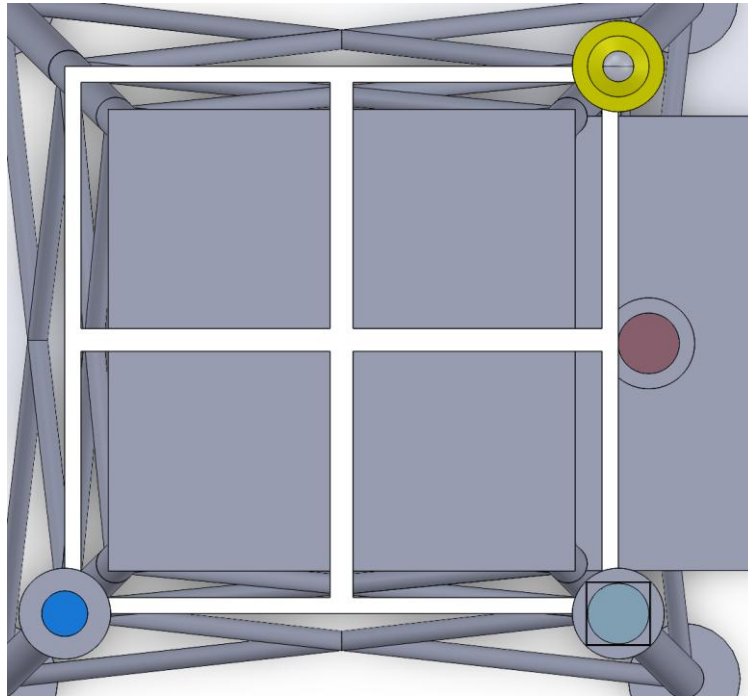
By:

Chenxi Dong, Rowan McCullough, Ian Torp, and Shutong Wang

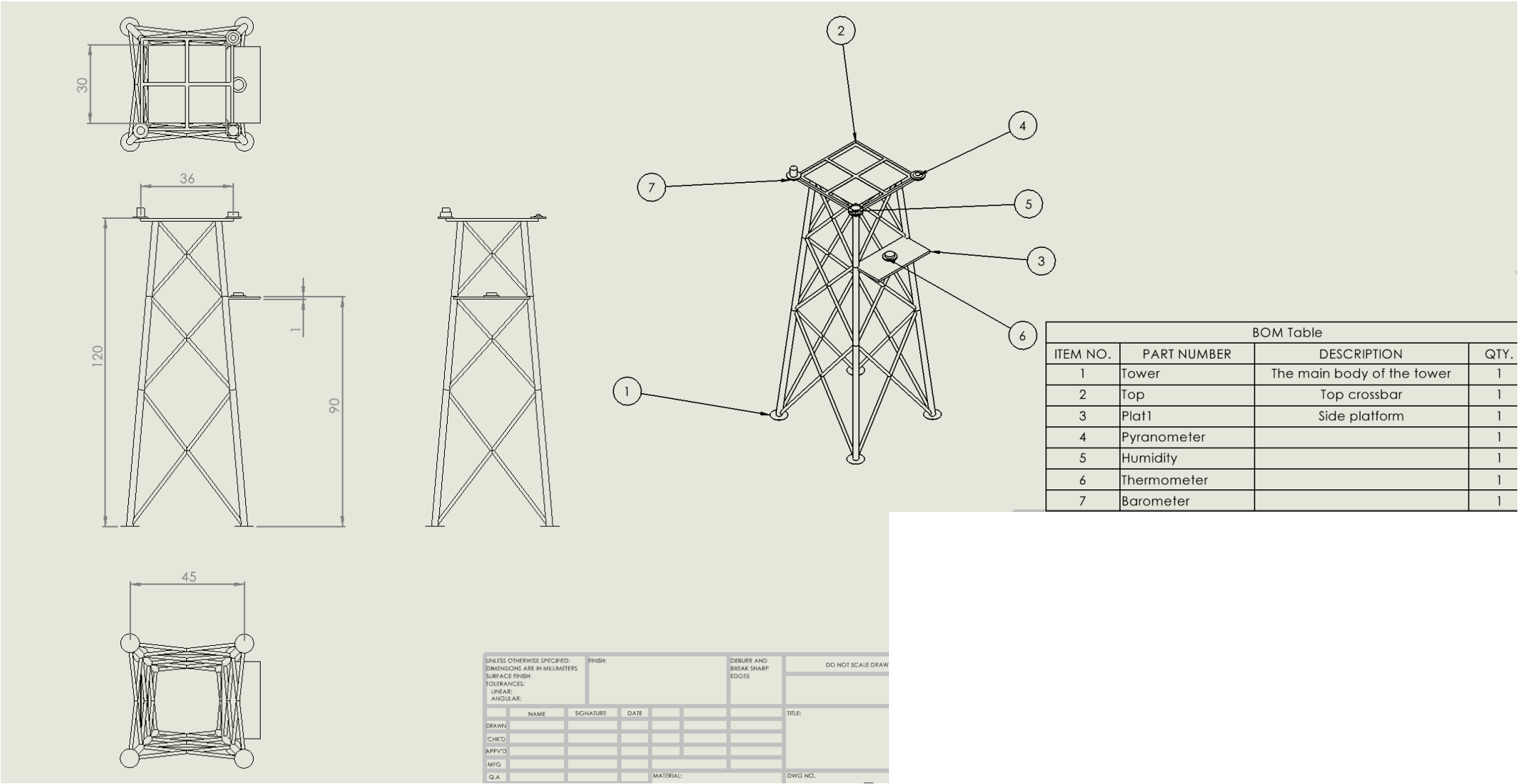
CAD – Aluminum Crossbar



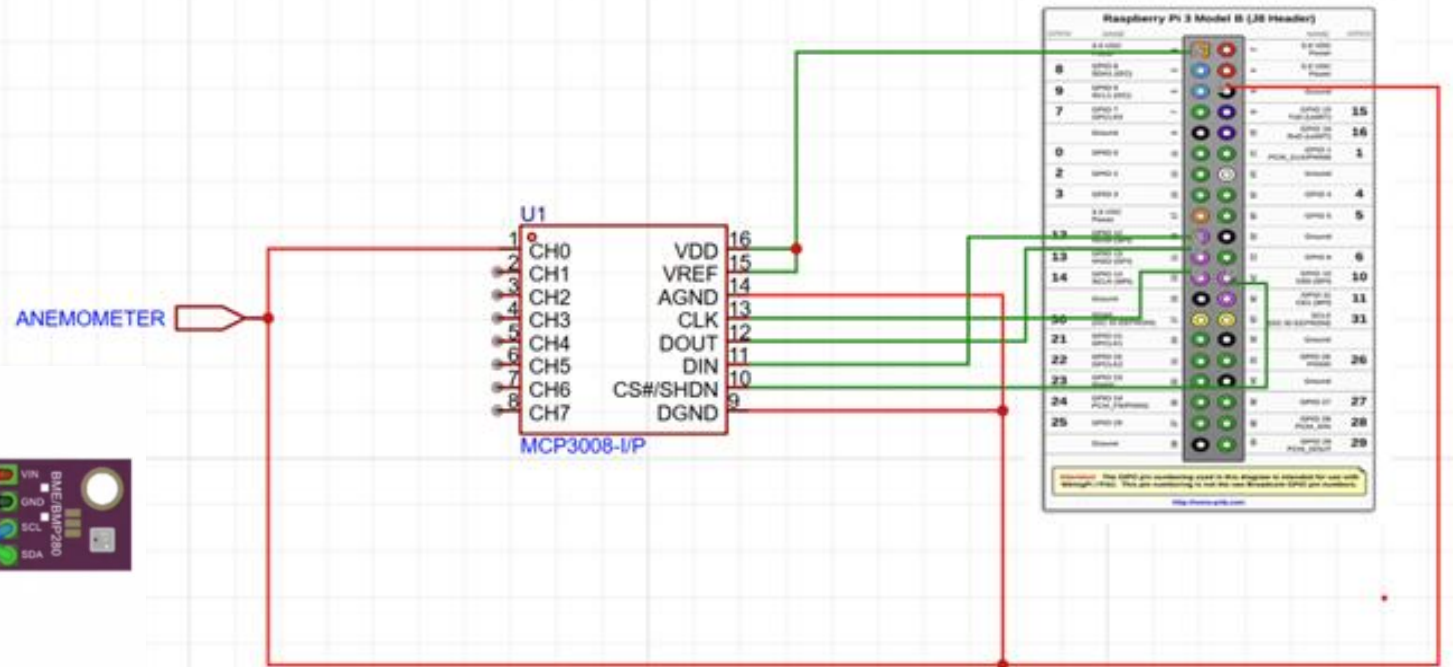
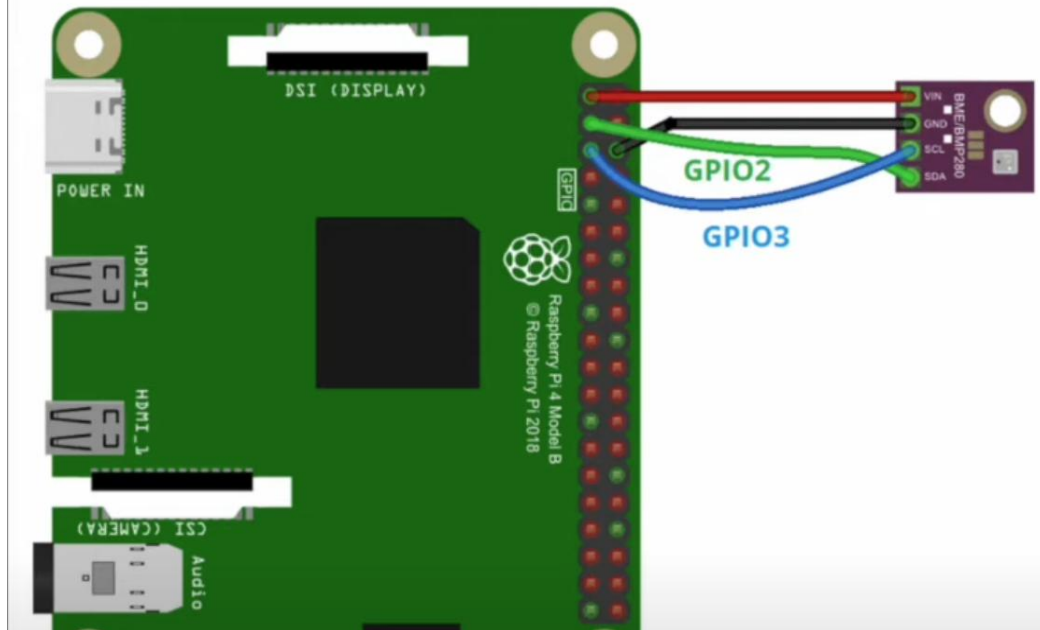
CAD – Weather Tower



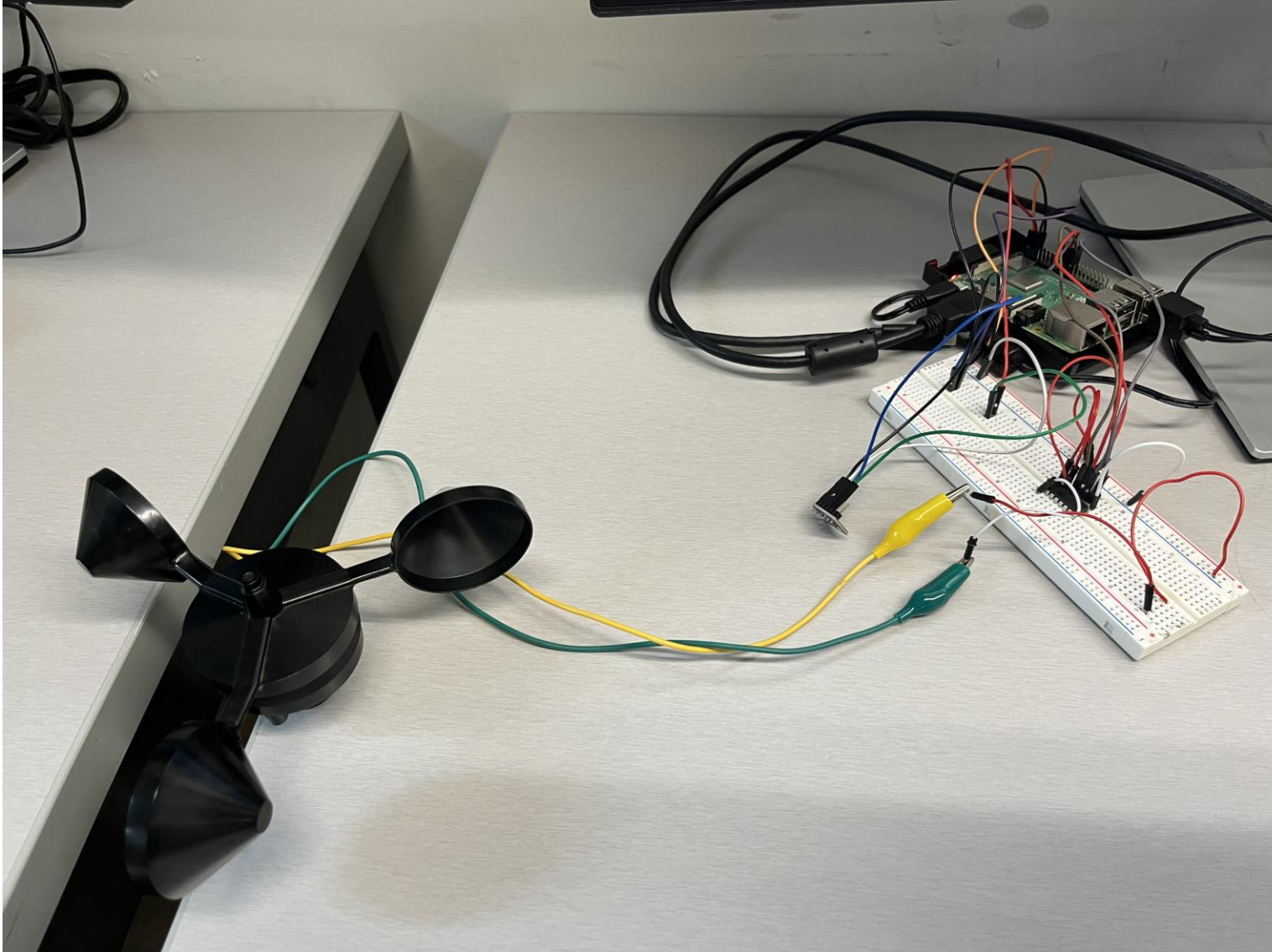
Design Description



Wiring Diagrams



Current Sensor Connections



Budget

IT Ian Torp "Total Fundraising" \$300		
Split with		
	Rowan McCullough	\$75.00
IT	Ian Torp Paid	\$75.00
CD	Chenxi Dong	\$75.00
SW	Shutong Wang	\$75.00

\$183.03 Remaining

Client Funding Support:

On Fri, Sep 19, 2025, 12:37 PM Carson Marty Pete <Carson.Pete@nau.edu> wrote:

Hi all,

I think I was able to get \$500 to support your capstone project! These funds will be integrated thru capstone purchasing at the deans office and this should cover any odd purchase you need to make toward the design not covered by your fund raising. I am working on a few things with the deans office and these funds should be available by monday but I will need the following:

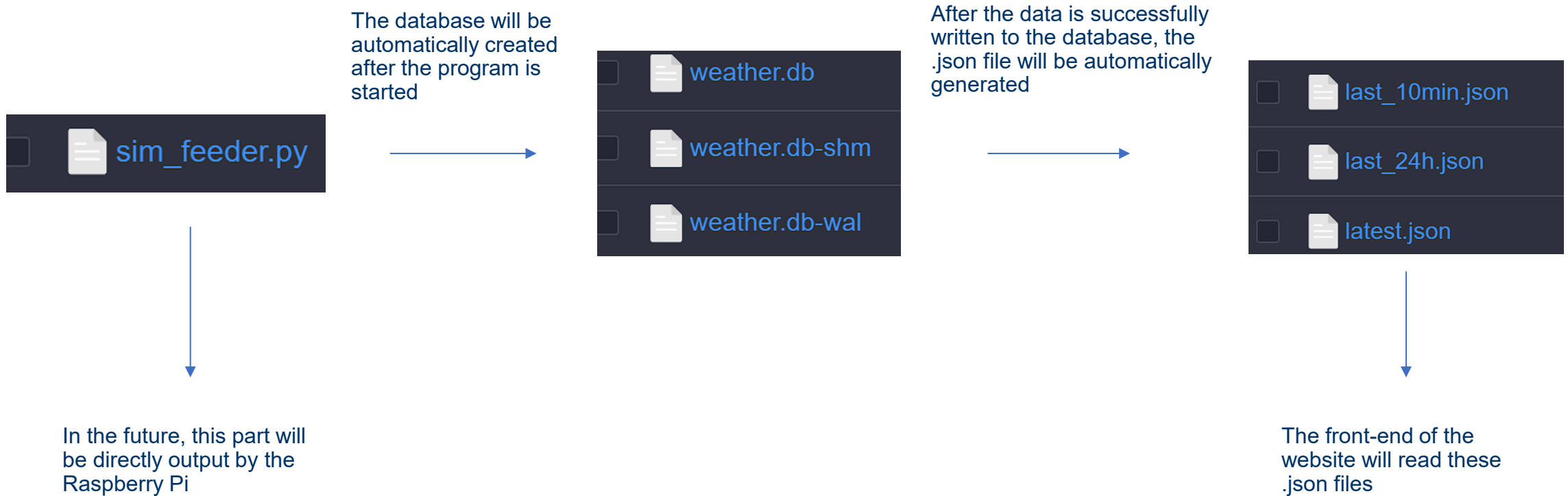
Bill Of Materials

Material	Quantity	Cost	Part Status	Make/Buy	Primary vender	Manufacturer	Lead Time	Link to Product
Onn MicroSD card 32gig	1	6.96	Arrived	Buy	Walmart	Onn	Same Day	https://www.wa
MCP3008 Analog to Digital Converter	2	15.3	Arrived	Buy	Amazon	Bridgold	Two Day	https://www.am
BME280 Sensor	2	14.1	Arrived	Buy	Amazon	Qoroos	Next Day	https://www.am
Model MS60 Pyranometer	1	3100	In house	Preowned	NRG	EKO	N/A	https://eko-insti
T60C Temperature NRG Sensor	1		In house	Preowned	NRG	NRG	N/A	https://www.nrg
Wind Vane NRG #200P	1		In house	Preowned	NRG	NRG	N/A	https://www.car
NRG #40C Anemometer	1		In house	Preowned	NRG	NRG	N/A	https://www.nrg
NRG BP60 Barometric Pressure Sensor	1		In house	Preowned	NRG	NRG	N/A	https://www.nrg
Raspberry Pi 3 model B+	1	35	In house	Preowned	Mouser	Raspberry Pi	N/A	https://www.mc
Wire/cabling	1	22c/ft	In house	Preowned	Home Depot	Syston	N/A	https://www.hoi
1/2 emc tubing	7	N/A	In house	Preowned	N/A	N/A	N/A	N/A
3/4 emc tubing	18	N/A	In house	Preowned	N/A	N/A	N/A	N/A
36/1/(1/16) Angle Gage Aluminum	4	34.32	Arrived	Buy	Home Depot	Everbilt	Same Day	https://www.hoi
1.5/36/(1/8) Flat Bar Aluminum	2	27.28	Arrived	Buy	Home Depot	Everbilt	Same Day	https://www.hoi
2' Boom Mount	1	N/A	In house	Preowned	N/A	N/A	N/A	N/A
Voltage Amplifier (AD620)	1	13.23	Ordered	Buy	Amazon	Midzooparts	6-10 Day	https://www.am
FUTURE PURCHASES:								
Mounting Bolts	4	11.36	Must order	Buy	Home Depot	Everbilt	Same Day	https://www.hoi
EKO Converter Cable	1	N/A	Emailed	Replace	EKO	EKO	Unknown	https://eko-insti
	Total Cost:	3257.55	92% ordered					
			88% Arrived					

Manufacturing Plan

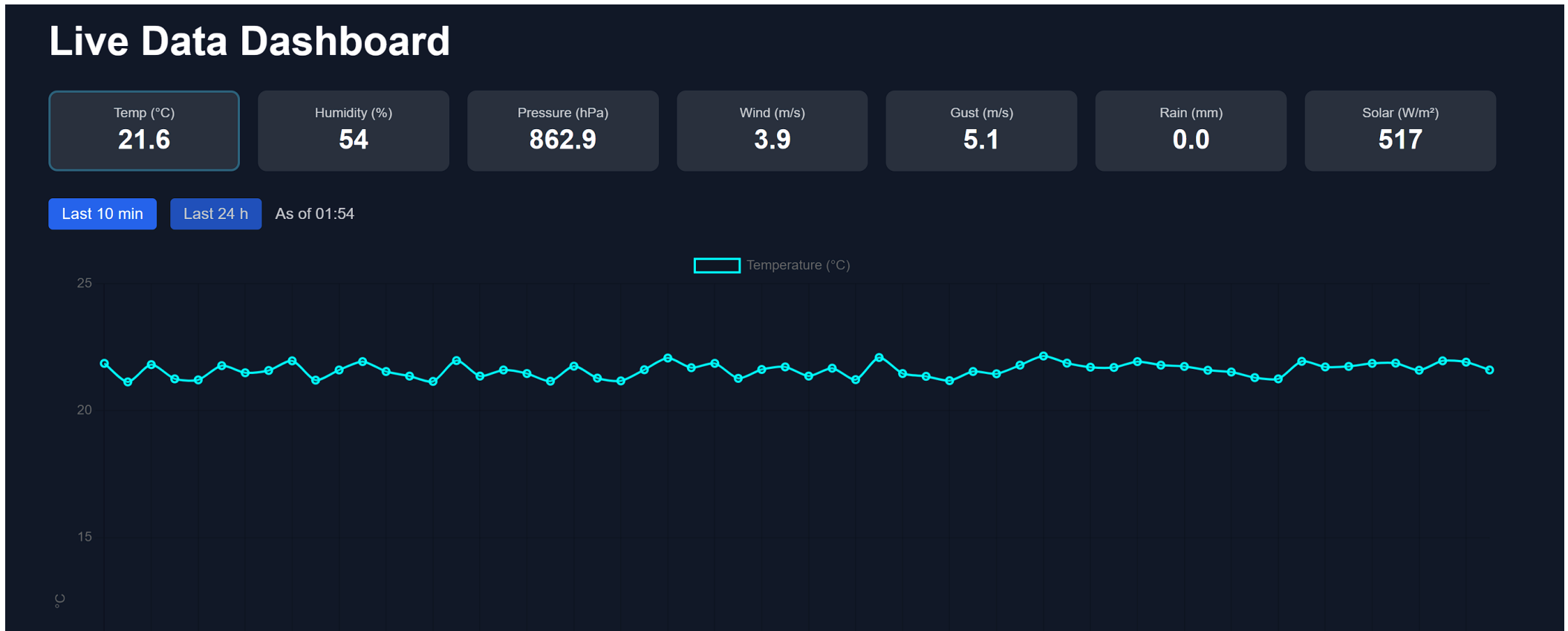
- No parts need to be manufactured, only parts assembled
- Crossbar will be assembled by next hardware update
- Sensor electrical assembly needed for data collection
- Wiring will be redone using longer cables, custom PCB board and metal tubing for long-term use
- Final mounting of sensors will occur after testing is complete

Database



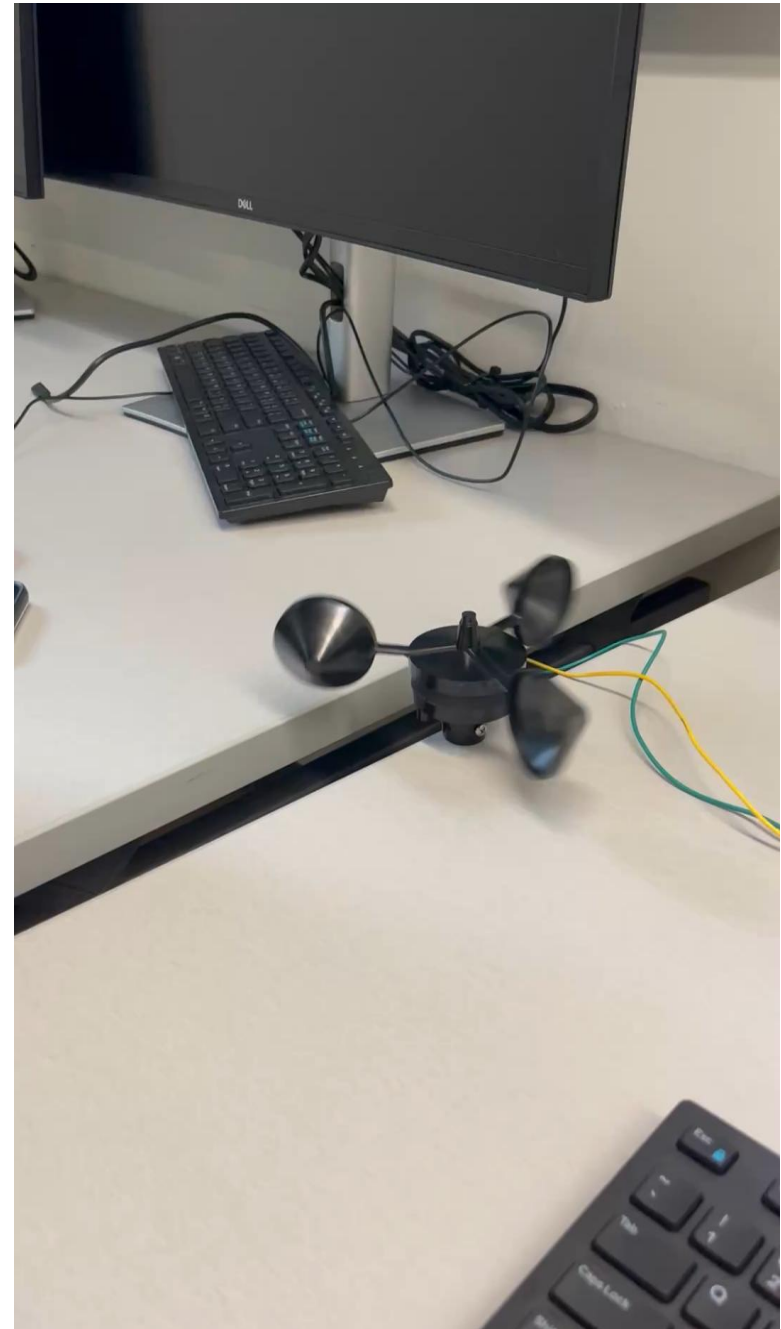
Live Dashboard

Weather Station



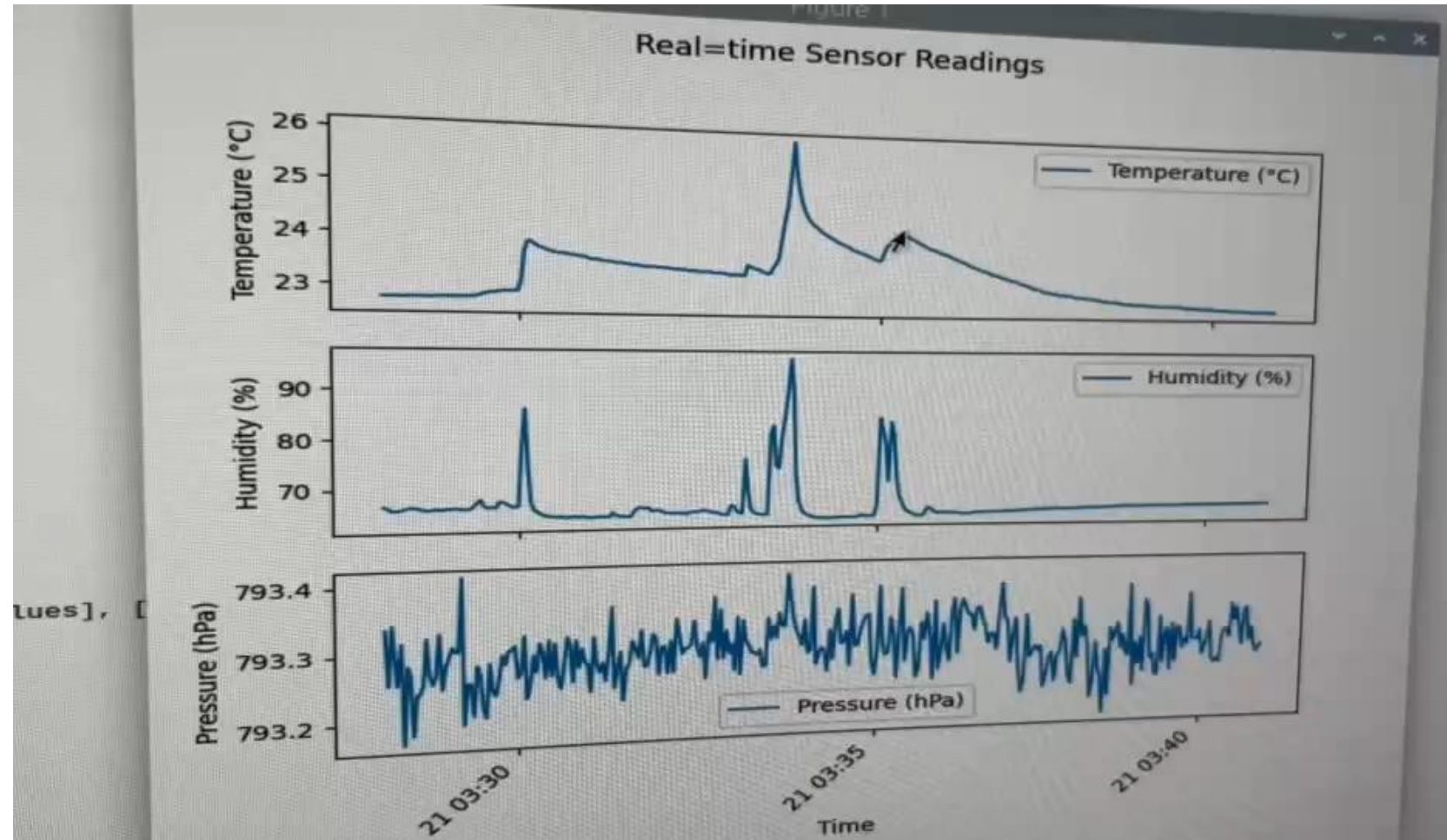
Anemometer

- Anemometer outputs voltage sine wave, uses code to change to Hz
- Calibration equation from manufacturer used for conversion into wind speed
- Writes data to "json" file for website
- Wind speed output in kph and mph



Humidity Sensor

- BME280 digital humidity sensor
- Writes data to graph in real time
- Only humidity data will be collected



Thank You & Questions?