About

The Digital Air Quality Sensors (DAQS) is an ambitious project where we are aiming to create a network of affordable sensors to provide a comprehensive coverage of Abu Dhabi’s air quality. We envisioned the sensors to be placed on top of buses that will roam the city and collect the air quality data along the way. We also envisioned the sensors to cross calibrate against the scientific grade air quality sensors that Abu Dhabi government currently have in place around the city. We believe that a comprehensive coverage of air quality data would benefit Abu Dhabi extensively for better policy enaction, to provide better health blah blah.

The device

The DAQs consist of Carbon Monoxide, Sulfur Dioxide, Nitrogen Dioxide, Ozone, and an optical particle counter. The device also contains data acquisition module consisting of raspberry pi . Currently the device can automatically collect air quality data and upload the data directly to a data base.

Work Done

I took over the project one year after its inception. In order to bring the device to something that we envisioned to be. I re envisioned the device make it weather proof. I also 3D printed the enclosure. Use custom made PCB to reduce the number of wires. I debugged the code extensively to achieve a better data accuracy.

We also presented the sensor to the Prime Minister’s office in Dubai where we met with and adviced by environemental experts.

Future work

We will continuously test the accuracy of sensor data. What we will continue to work on is to incorporate neural networks to cross calibrate the sensors. I believe that through cross calibration of the data, we could achive data more accurate than indicative data. Further more, from the physical side, I want to decrease the air chamber size to make the sensor more responsive to the change of air quality ad straighten the tube going to the particle counter to decrease the chance of a build up.