

ANDROID BASED DUST MONITORING SYSTEM WITH RESPIRATORY HEALTH CARE DSS (REALTIME D-MON)



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1. INTRODUCTION

Realtime DMON is a three-part system designed to provide respiratory health care advice via an Android application. The system consists of an Arduino based dust monitoring device that provides air quality data and an Android based application that provides realtime access to the air quality data with health care precautions. The air quality data is also made available via a public web portal.

2. BENEFITS

- People with respiratory and heart diseases are provided with precautionary steps when the air quality depreciates, allowing them to avoid possible health complications.
- People who exercise regularly may find cleaner alternatives when the air quality depreciates.

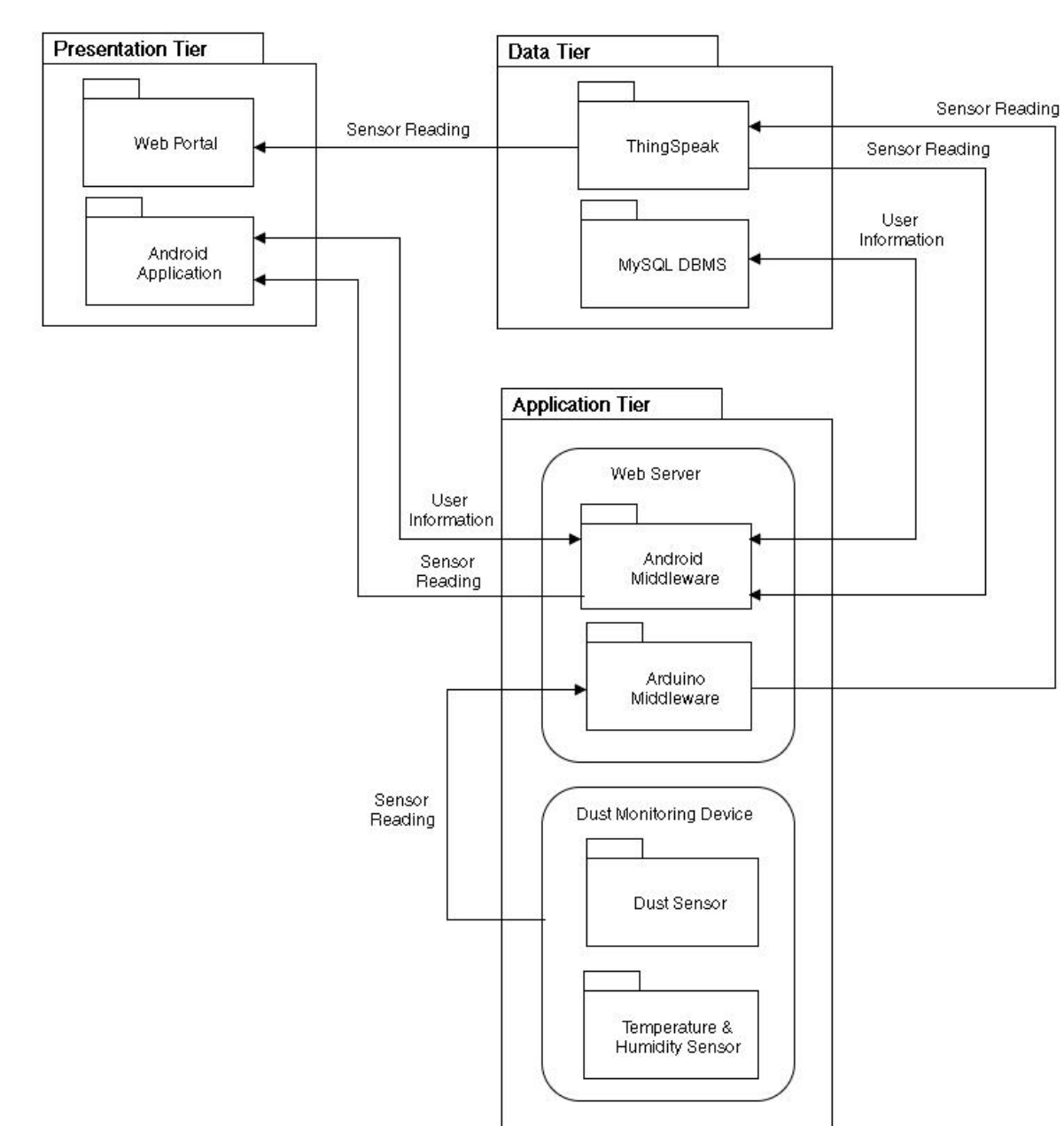
3. NOVELTY

- Unlike most air quality monitoring applications, Realtime DMON does not use aggregated data from weather monitoring stations, thereby making it more reliable in detecting particle pollution in a smaller radius i.e. industrial areas.
- Device agnostic architecture for the application allows the dust monitoring device to be customised easily.

4. POTENTIAL MARKET VALUE

As a post-colonial country, Malaysia has a lot of unplanned cities and towns that have residential zones intersecting with industrial zones with the Parit Raja town being a prime example. Realtime DMON could serve as a cheap, localised, community-driven air quality monitoring system.

5. ARCHITECTURE

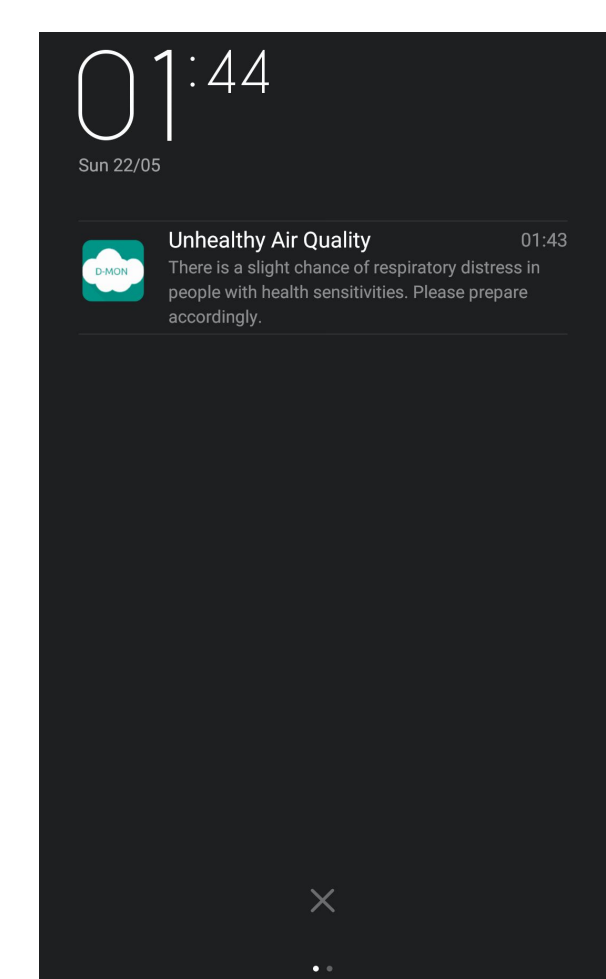
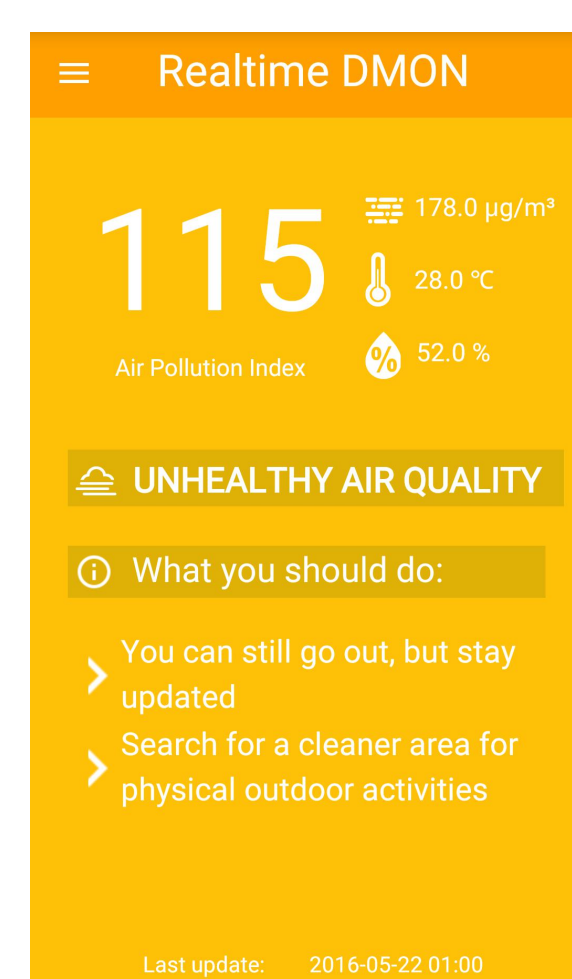
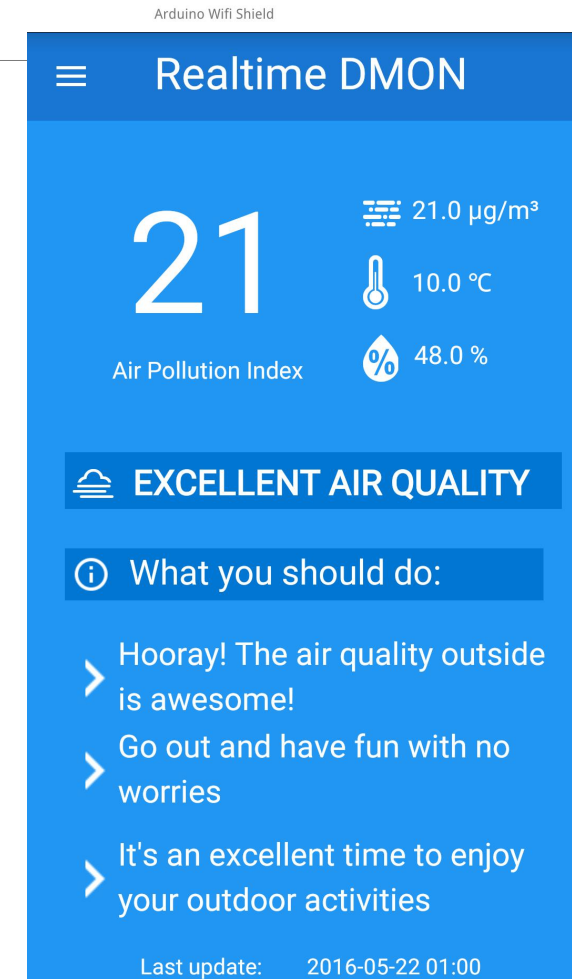
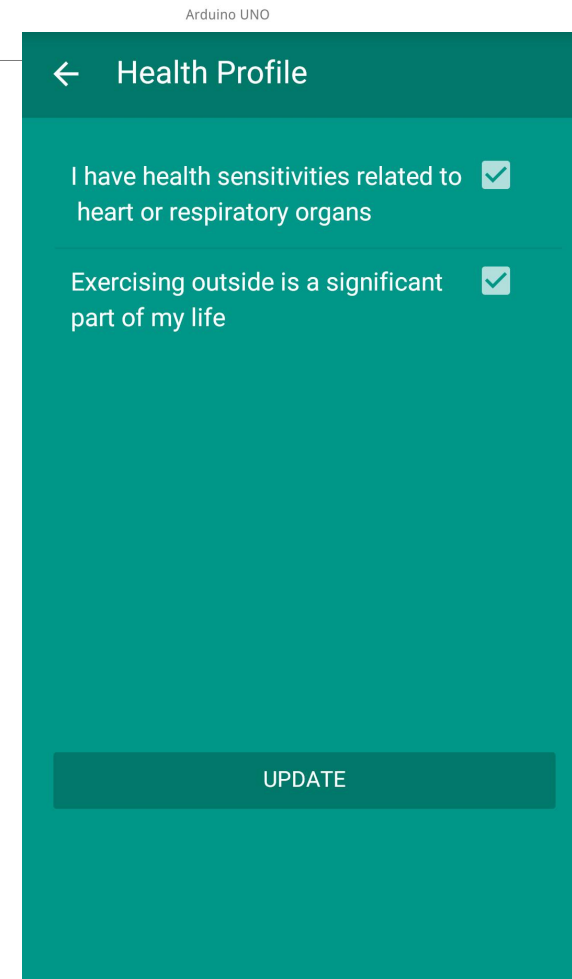
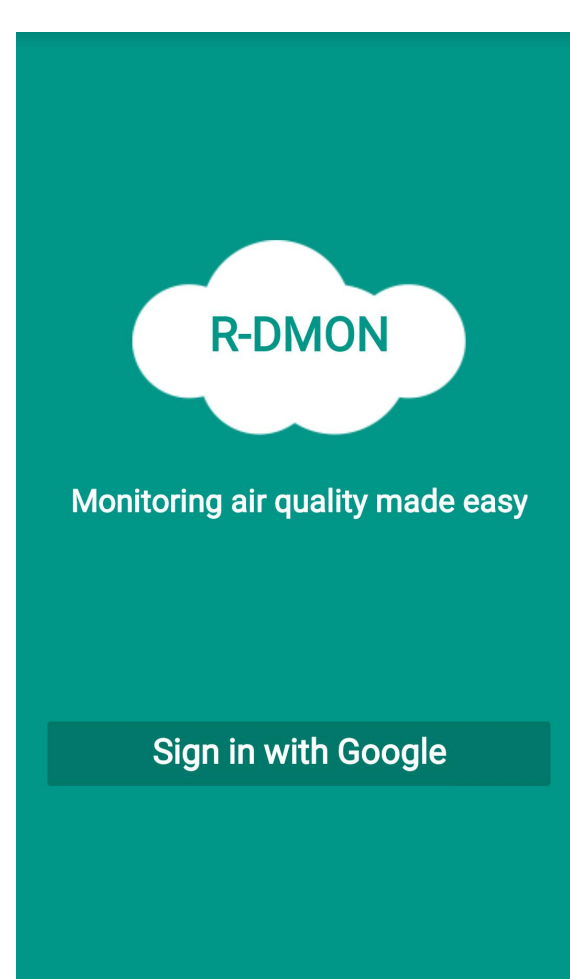
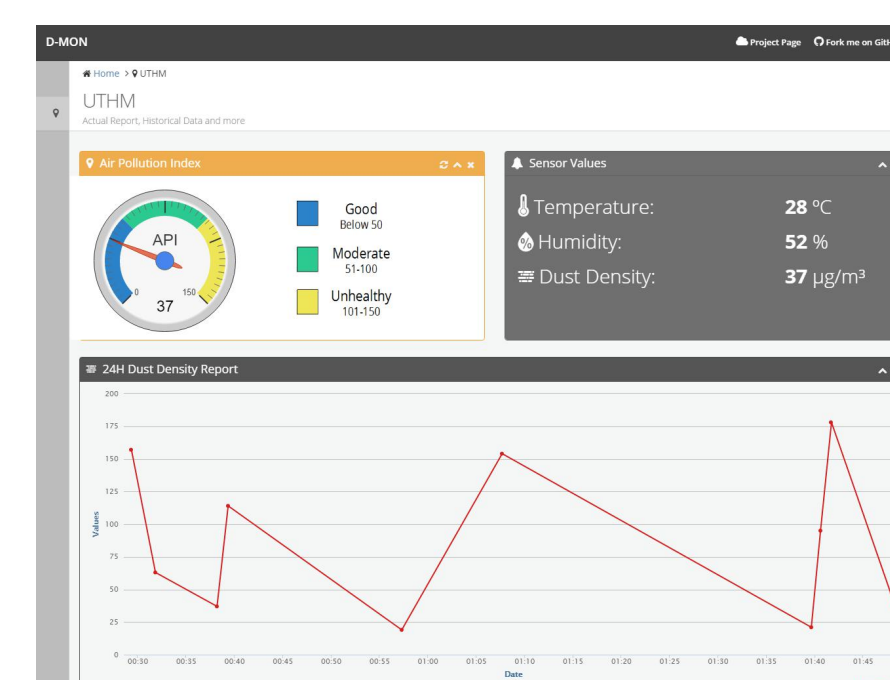
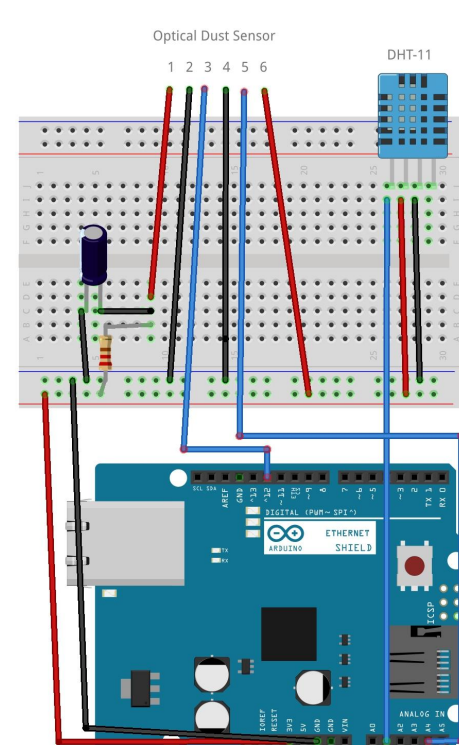


6. IMPLEMENTATION

Prototype Dust Monitoring Device

Process Flow:

- Optical Dust sensor measures dust density
- DHT-11 measures temperature and humidity
- Arduino UNO processes the inputs and transmit to IOT platform using the Wifi Shield



7. REFERENCES

- [1] N. M.Z., R. R.M., Z. MD. A. and M. Z. A., "Study on concentration of PM10 and PM2.5 particulate matter in UTHM campus by using E-sampler", in International Conference on Environment (ICENV2008), Pulau Pinang, 2008.
- [2] Holstius, D. M., Pillarisetti, A., Smith, K. R., & Seto, E. (2014). Field calibrations of a low-cost aerosol sensor at a regulatory monitoring site in California. Atmos. Meas. Tech, 7(4), 1121-1131.