**Case Study on Automated Air filter and Safety sensor**

Requirements:

**Features/deliverables:**

1. The system must continuously monitor the level of dust, smoke and presence of flammable gas in the house.
2. The system must immediately act to those situations where it finds a danger by sensing the dangerous amount of these things.
3. The system should be quick in terms of response and must behave as hard real time at some situations.

**Hardware Elements:**

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| **Components** | **Job / Role** |
| MQ -2 | Sensor for H2, CO, LPG, CH4 |
| MQ – 135 | Sensor for smoke, CO |
| GP2Y1010AU0F | Sensor for dust particle, smoke. |
| 12V Solenoid Water Valve | For spraying the air purifier in the house. |
| Any Chimney runs on 220V AC | For exhausting the smoke from the kitchen. |
| 12V Buzzer | For making the alert in case of detection of flammable gas. |
| HLK-5M12 | 220V AC to 12V DC Rectifier (5W) |
| LM2596S | 3-40V DC to 1.5-35V DC Buck Converter |
| AtMega2560 | Microcontroller |
| 3-4 Channel Relay | For electronical activation of the valve, buzzer and chimney. |
| Printed Circuit Board | For assembly of the complete system |
| Wire Heat Shield | Protecting wires from the heat of environment in kitchen. |