Development Of a Microcontroller-Based Gas Detection System Using Wireless Sensor Network

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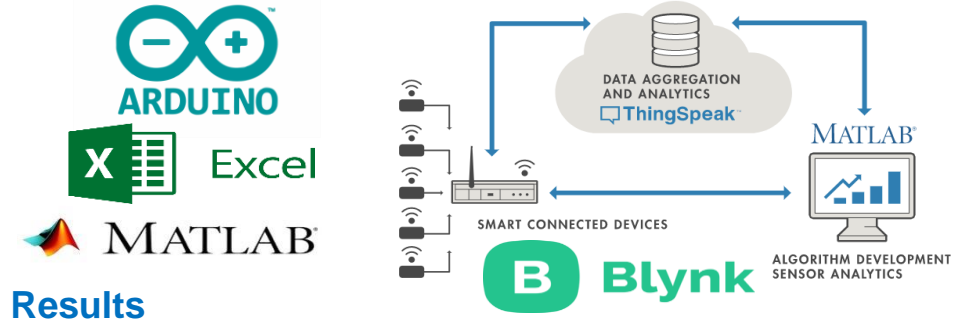
Project Background

- The development of the equipment and our daily life is the major failures to protect the environment against pollution. Consequently, the ecological contamination control and monitoring systems become a major issue.
- The liquefied petroleum (LPG) and its leakage in large amounts cause explosive accidents. Therefore, gas leakage detection and alerting are of prime importance.
- Gas leakage detection and alert systems are of extreme importance in homes, industries, automobiles, etc. Besides, the survivability of human life and its effects relies upon the early discovery of gas leakage. Therefore, in the area of wireless sensor networks and earlier gas detection (alert system) is imperative.
- The monitoring, reorganization, and controlling of the data are the key concern of Wireless Sensor Network.
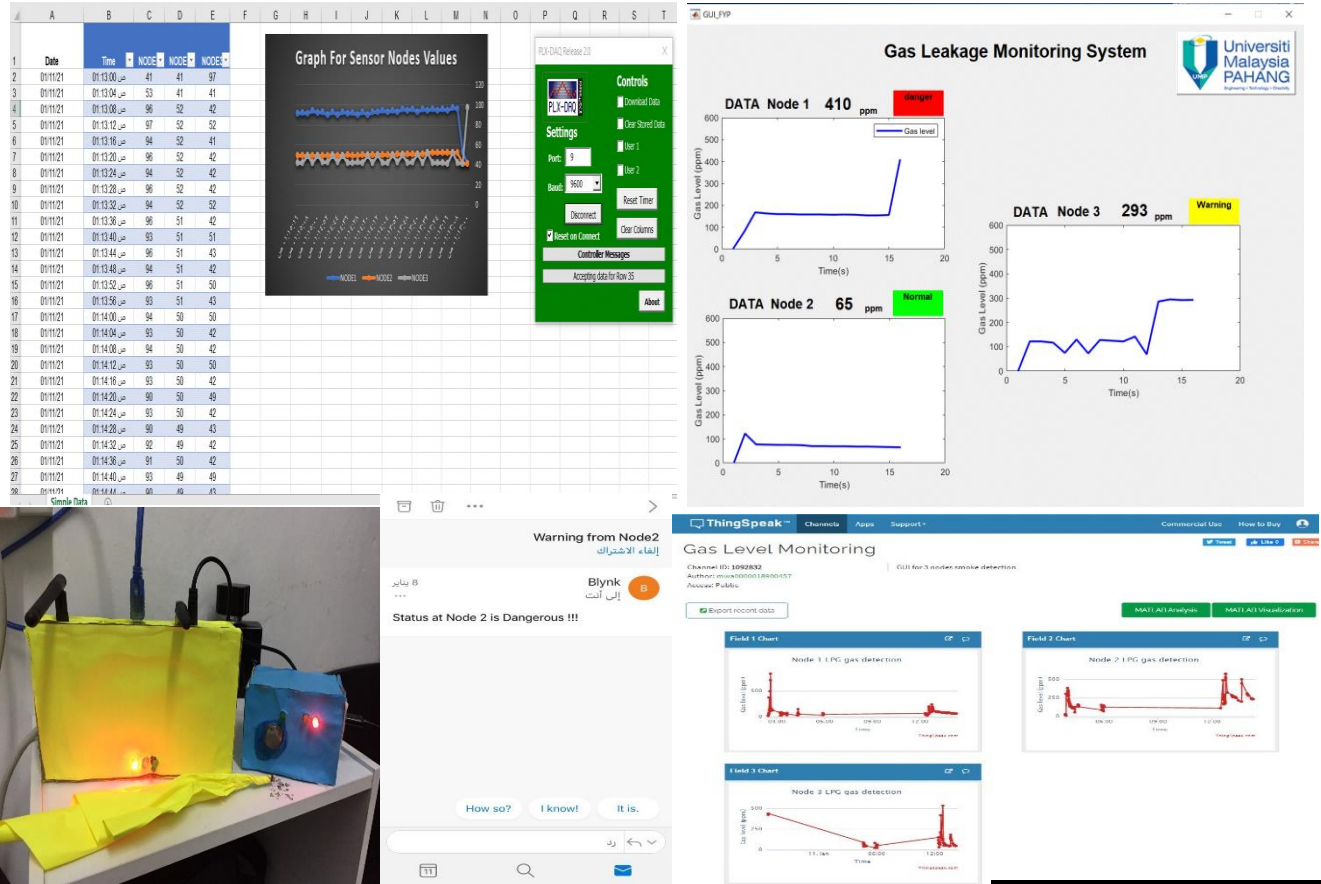
Project Scopes

- Develop an effective LPG leak monitoring system in multiple locations, connect them to the coordinator wirelessly And alert the user to the location of the gas leak.
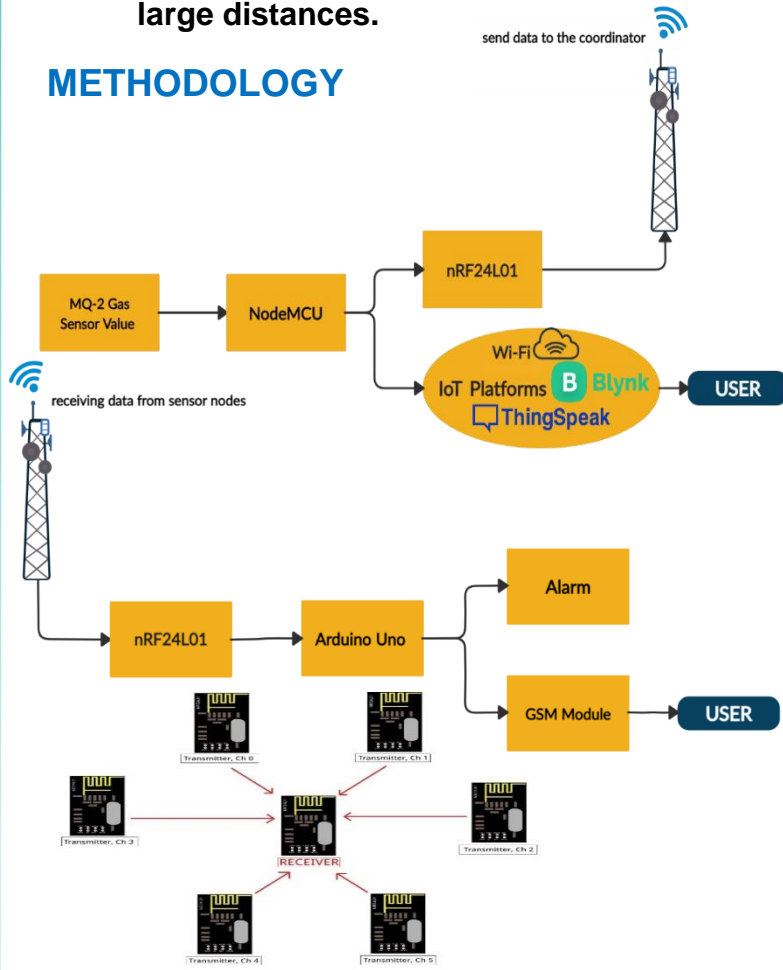- Develop a wireless sensor network for large distances.

METHODOLOGY

Software

Results

Financial Cost

FINANCIAL COST For The Coordinator

ITEMS	ESTIMATE PRICE(RM)
Arduino UNO R3 kit	50.00
SIMCOM SIM900 GSM GPRS	50.00
PCB board	5.00
nRF24L01+ Long Distance Module	20.00
Total (RM)	125.00

*Arduino UNO R3 kit include (buzzer 5v, LED , Resistors, wires)

FINANCIAL COST For Sensor Nodes

ITEMS	Quantity	ESTIMATE PRICE(RM)
NodeMCU	3	60.00
nRF24L01 Wireless Transceiver Module	3	30.00
PCB board	3	15.00
Gas Sensor MQ-2	3	15.00
Buzzer	3	1.00
Total (RM)		121.00

❖ Estimate Financial cost for each sensor node around = RM 40
❖ So Estimate Financial Cost for Project = [125+121 = RM 246]