Basic Details of the Team and Problem Statement

Ministry/Organization Name/Student Innovation:

Ministry of Social Justice and Empowerment

PS Code: PS1368

Problem Statement Title: Despite prohibition of hazardous cleaning of sewers and septic tanks, it is still being resorted to in many parts of the country.

Team Name: Team Spectre

Team Leader Name: Atharva Nitin Kolhe

Institute Code (AISHE):

Institute Name: Shri Guru Gobind Singhji Institute of Engineering and Technology (SGGSIET), Nanded

Theme Name: Smart Automation

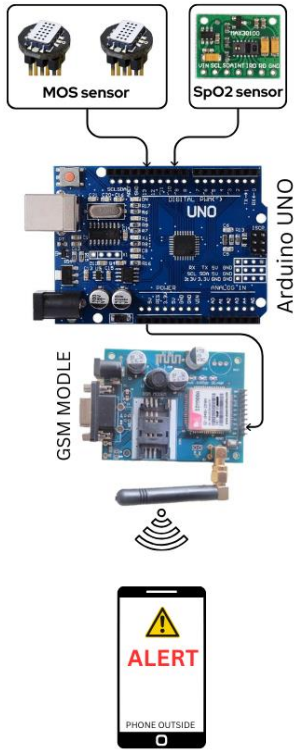
Idea/Approach Details

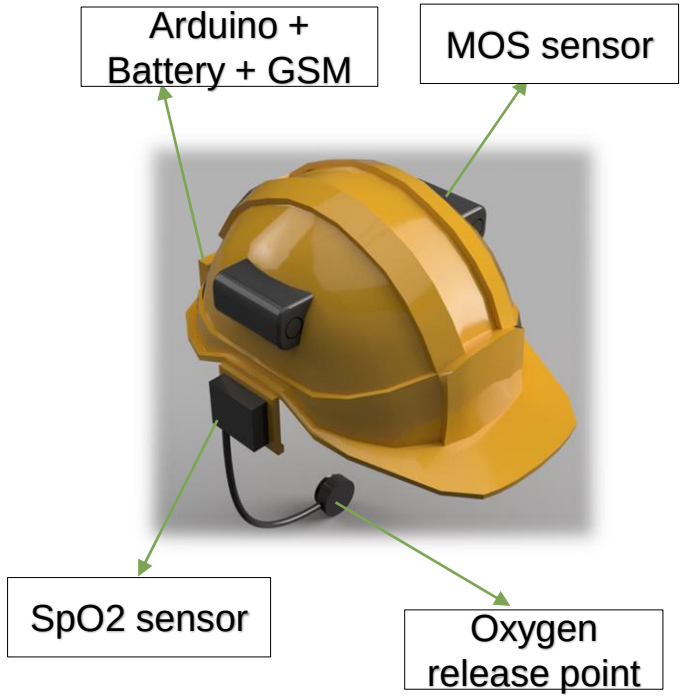
Describe your idea/Solution/Prototype here:

- Specialized automation to enhance worker safety during septic tank cleaning contributing to safer environment and reduced occupational hazards
- Advanced gas sensor or MOS(Metal oxide semi-conductor) sensor are used to detect the levels of hazardous gases present inside
- Linking a GSM (Global System for Mobile Communications)module to trigger alarms on phone for excess level of gases
- Addition of SpO2 sensor on earlobe to monitor blood oxygen level
- Emergency oxygen supply, for low oxygen response, through a pipe as soon as the alarm is sent

PRODUCT STATUS :

60% product built completed and further build is on progress . Testing and validation process are next to be undergone





Describe your Technology stack here:

- **MOS sensor** – For hazardous gas levels detection
- **SpO2 sensor** – Oxygen level detection of worker
- **Arduino UNO** – Control unit of the model
- **GSM Module** – communication module for alerts
- **Arduino IDE** – used for coding the Arduino UNO

Idea/Approach Details

Describe your Use Cases here

- **Sewer/Septic tank** : detection of reducing gases and provision of supplying oxygen increases the survival rate of the worker
- **Dumping zones** :Initiates instantaneous alert when it detects the presence of hazardous gases while cleaning the dumping zone.
- **Gobar gas plants**: while cleaning gobar gas plants blood oxygen level is monitored through SpO2 sensor and oxygen is supplied if needed.
- **Mining areas:** our device can decern the concentration of gases in the environment and provide alert at the time of higher propensity for ignition

Describe your Dependencies / Show stopper here

- Provides instantaneous alerts after detection using GSM module
- Installation of SpO2 sensor on the earlobe helps to monitor the blood oxygen level of the worker.
- Crucial ability to supply Oxygen to provide assistance to the worker
- Ease of use and cost effective : the helmet is light weight, and the cost is kept under Rs.3,000/-.
- Large scale implementation is feasible because of the ease of use and portability of the model

- CHANNELS:

Municipal corporations, mining industry , cleaning industry

- REVENUE STREAMS :

Product based business

Team Member Details

Team Leader Name: **Atharva Kolhe**

Branch : BE | Stream : Mech | Year : III

Team Member 1 Name: **Apoorv Mehar**

Branch : BE | Stream : CSE | Year : III

Team Member 2 Name: **Dhruva Mahajan**

Branch : BE | Stream : Instru | Year : III

Team Member 3 Name: **Sayee Doibale**

Branch : BE | Stream: EXTC | Year : III

Team Member 4 Name: **Siddhant Ghodke**

Branch : BE | Stream :EXTC | Year : III

Team Member 5 Name: **Tanmay Tigaonkar**

Branch : BE | Stream :CSE | Year : III

Team Mentor 1: **Gajanan Trikutkar**

Category : Academic | Expertise : | Domain Experience : 18+

Team Mentor 2 Name:

Category : Academic | Expertise : IOT | Domain Experience (in years):