SEWAGE SLUDGE REMOVAL BY MACHINE ROBOT

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ABSTRACT

Manual scavenging of the sewage is practiced in all places of India.Robot can used as a replacement to manpower in sewer maintenance. The robot inspects sewer lines for cracks, corrosion, obstacles, gas present, etc. A robot is developed, which can be controlled by the PWD workers and efficiently cleaning and disposing the drainage wastages. An Robots in traditional circumstances and through the Middle Ages were used basically for preoccupation. Regardless, the twentieth century incorporated an impact in the headway of present day robots. Through the straggling leftovers of the century, robots changed the structure of society and mulled over more secure conditions for work. Additionally, the execution of bleeding edge mechanical self-sufficiency in the military and NASA has changed the scene of national assurance and space examination. Robots have moreover been effective in the media and beneficial for toy producers. In later days itself, we are confronting numerous issues in regards to the Sewage Treatment Method and how it is cleaned. Because numerous poisonous conditions and rust materials in sewage are largely causing the human individual effectively. This drives people to cause numerous infections and influence them to endure lastly prompts passing also. So, this can be illuminated by acquainting the Machine Robot with make spotless and unadulterated the Sewage Treatment Method. By utilizing Machine Robot, numerous issues are altogether overcome by humans. In that Machine Robot, we are settling the Robot-Arm and through a few Axis they are utilized. Then it can be done with Stepper Motor to move with different angles from left to right and then from top to bottom and they are utilized. Then, with the help of LCD Module display it helps to view what the process is happening in the Sewage cleaning process. With the help of Lead Acid Battery, they can be charged after the completing the process.

1.Existing system

Before many year people enter the manholes in order to clean the wastes. Later pumps and tanks are used. These days due to technological development sewer robots are used in cleaning the sewages. •The greatest disadvantage of the existing method is that it fails to clean the muds that are in the form of rock solids due to the deposition of slits. The current practice of sewerage system in India uses manholes and sewer lines as collection and transport to the treatment plant. However, with year- on-year increase in population, the system results in higher operational and maintenance costs, despite reasonable efficiency under Indian conditions. The lower occupancy of population causes a reduction in the fully-fledged layout systems and gives rise to many hazards to the environment because of poor transport conditions resulting in poor operational schemes. The current *per capita* water supplies are not even sufficient to meet the minimum *per capita* demand of 135 L to satisfy the self-cleaning velocity in the sewer lines, and the conventional sewerage systems are not capable of meeting required efficiency. It is estimated that about 38,254 million liters per day of wastewater is generated in tier 1 and tier 2 cities, which cover about 31% of the total sewage generation considering both sewered and unsewered areas (NCIWRDP/MWR, 1999). An increase in population will also give rise to an increase in water supplies and wastewater generation. About 80% of the water supplied is generated as wastewater. From the GOI 2010 data, it is estimated that around 120 million m^3 of sewage will be generated during the projected year of 2051 with additional wastewater generation around 50 million m^3 of increasing water supplies from rural and community areas. However, the management plan for the sewerage systems lack strategies for handling wastewater in the future. The CPCB India studies show that there are 269 sewage treatment plants (STPs) in India, out of which only 231 plants are in operating condition, and they cover only 21% of the country's total sewage generation .
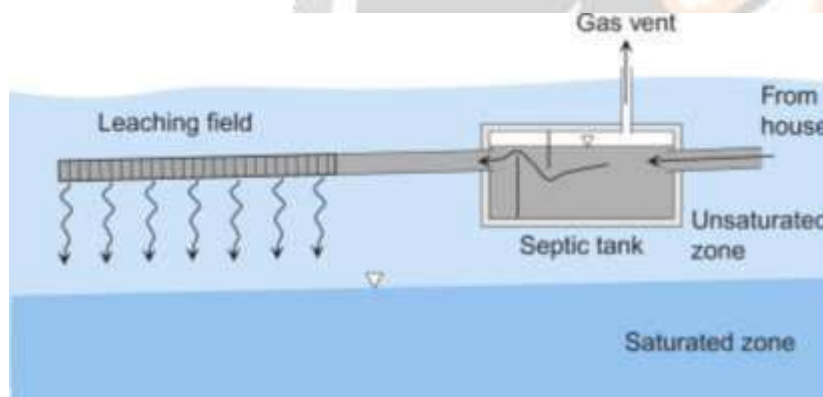

Fig-1 Current system

1.2 PROPOSED SYSTEM

Proposed system clean the sewage that consists of rock solids thereby monitors the overflow of drainage water without manual interruption.This system is based on Zigbee platform. A L293D Motor Driver circuit is used in controlling the motors of robot .A MQ2 gas sensor is used to sense harmful gaseslikeH2S (hydrogen sulphide),LPG (liquefied petroleum gas),
(Methane) CH4 ,CO (carbon monoxide),alcohol, smoke .

1.1Pipeline Inspection

The created robot can travel through the insides of the funnels utilizing autonomous engines and altering wheels. The acquired outcomes were discovered tasteful and the created wise robot can be utilized for the constant pipe assessment and cleaning. The utilization of machine vision and neural system
in inside pipe cleaning robots can give answers for acquired outcomes were discovered tasteful and the created and reducer. Uses of in-pipe examination robots are assortment of issues related with it. More often than not, the be controlled by the remote framework and effectively cleaning. The utilization of machine vision and neural system
examination robot can go through straight pipelines, elbows executed. DC engine [9] is utilized to control the moving for example, ANN usage, and so forth. So the robot ought to funnels utilizing autonomous engines and altering wheels. The out of air blower, solenoid valves and air hoses. Principally robot controller board can't do every one of the calculations, The created robot can travel through the insides of the vary by guiding instrument, control source. Created in-pipe velocity of the robot. The pneumatic stress framework is made wise robot can be utilized for the constant pipe assessment and constrained by pipeline material, pipe size and workplace. Imperfections in the pipe are caused by maturing, consumption, rust and nature disaster then it is hard to discover the deformities and the place of the deformities, and furthermore there is extraordinary measure of misfortune

1.3 Robotic Arm

Comprehend which factor influence the execution of a mechanical arm and how it change an automated arm in work productive arm. Speed and increasing speed shift in various works, precision and repeatability is the imperative factor for any automated arm. Robot kinematics is use for finding the development of multi-pivot and multi-level [19] of flexibility. Mechanical arms are fabricated by utilizing diverse parameters like number of pivot, level of opportunity, working envelope and working space that arm cover, kinematics, payload, speed and quickening, precision and repeatability, movement control and drive of an arm and so on. The development of mechanical arm in most recent 20 years and depicted diverse parameters of an arm. To build up an idea of a lightweight robot utilizing lightweight materials, for example, aluminum and carbon fiber together with a recently created stepper engine model. The automated arm control technique is required to defeat the issue, for example, putting or picking object that far from the client, pick and place dangerous question in a quick and simple way. Assembling control frameworks that are required to control broadly circulated gadgets in a domain that is inclined to disturbances. An accelerometer controlled mechanical arm remote correspondence innovation. The range is likewise a constraint it can be improved by utilizing a remote correspondence innovation. Thin questions like paper and plastic cards are gotten by this automated arm . The articles may slide down because of the utilization of parallel gripper. This technique does not give wellbeing of the question. The System is fit for lifting just little weights, by presenting high torque giving engine huge weights can be picked. Give a generous answer for the issue of assembling automated cleaner using neighborhood assets while keeping it low expenses. Highlight of the planning and it would auto be able to deplete itself. This exploration make room for proficient floor cleaning with clearing and wiping activities. The mechanical angle is generally the maker's answer for finishing the appointed assignment and managing the material science of nature around it. RF modules have been utilized in programmed and manual with 50m territory for the make a framework remote.
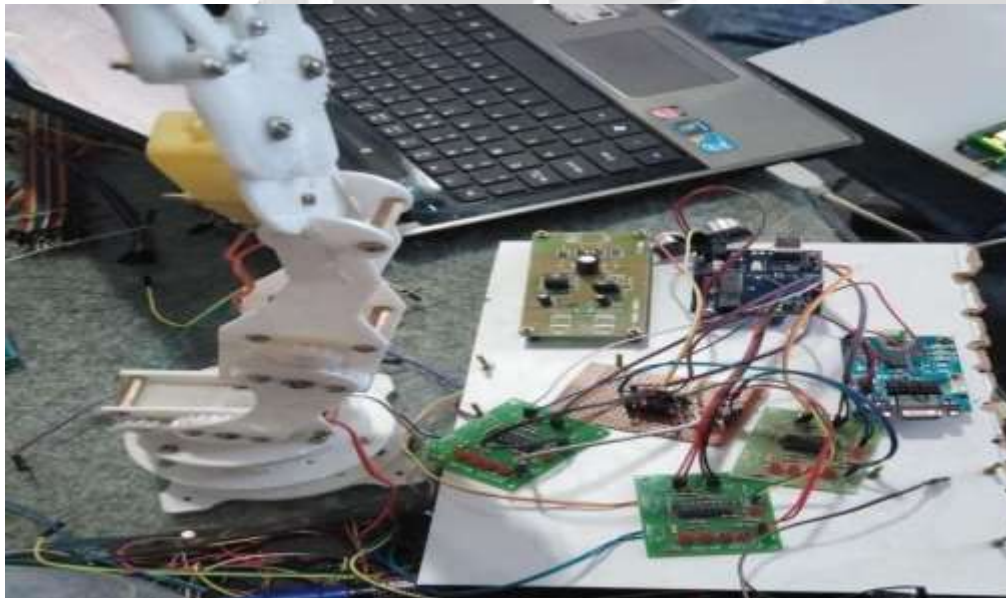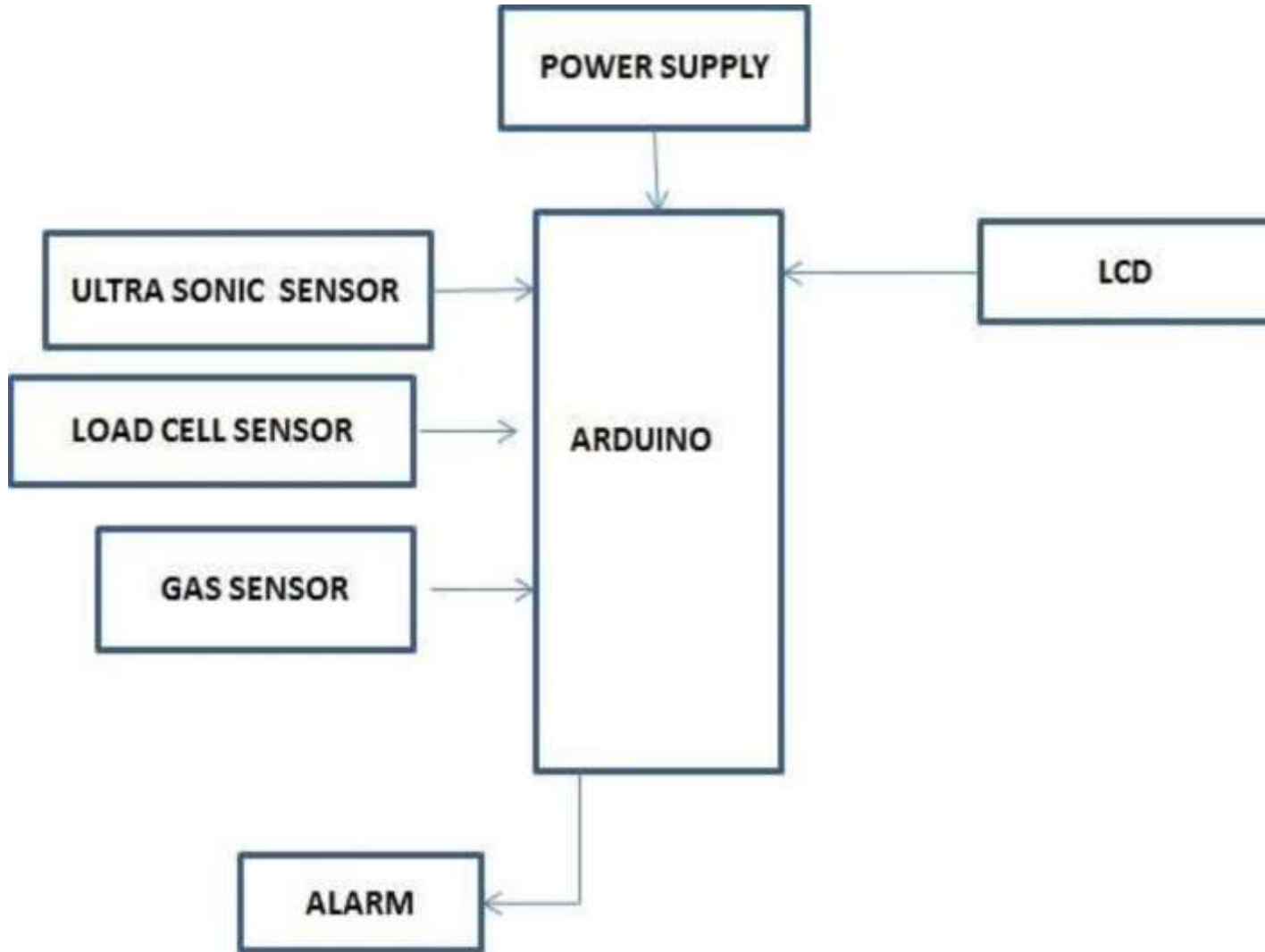

Fig-2 Robotic arm

BLOCK DIAGRAM:

3.HARDWARE REQUIREMENTS

•Gas sensor
•Load cell sensor
•Ultrasonic sensor
•Arduino •8051
microcontroller
•UART
•Zigbee
•Batteries 12v 1a
•LCD
•L293d driver Ic
•Robot arm
•Water Tank
•Jumper wire
•GB board
•Regulator
7805,7812

•DC Motor
•Water Tank
•Jumper wire
•GB board
•Regulator 7805,7812
•Diodes
•Arduino microcontroller
•Capacitor 2200uf,50v
•Power cables
•Ribbon cable
•Male buck
•Female buck

4.SOFTWARE REQUIREMENTS:

☐   Embedded c
☐   Arduino software
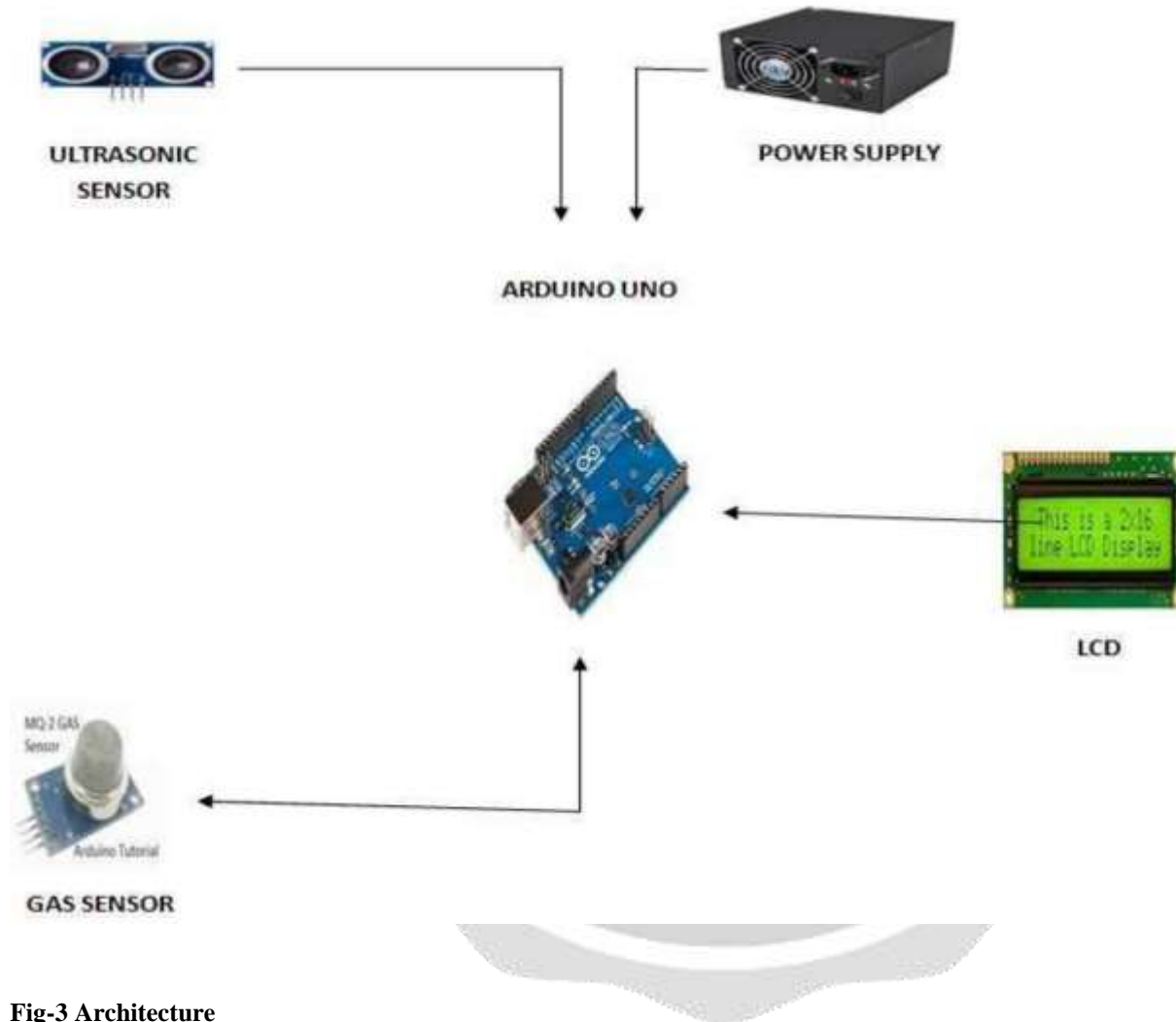☐   Keil software

5.Architecture of a proposed system

Fig-3 Architecture

5.1ARDUINO UNO MICROCONTROLLER:

Fig-4 Micro controller

5.2 LCD DISPLAY:

Fig-5 LCD Display
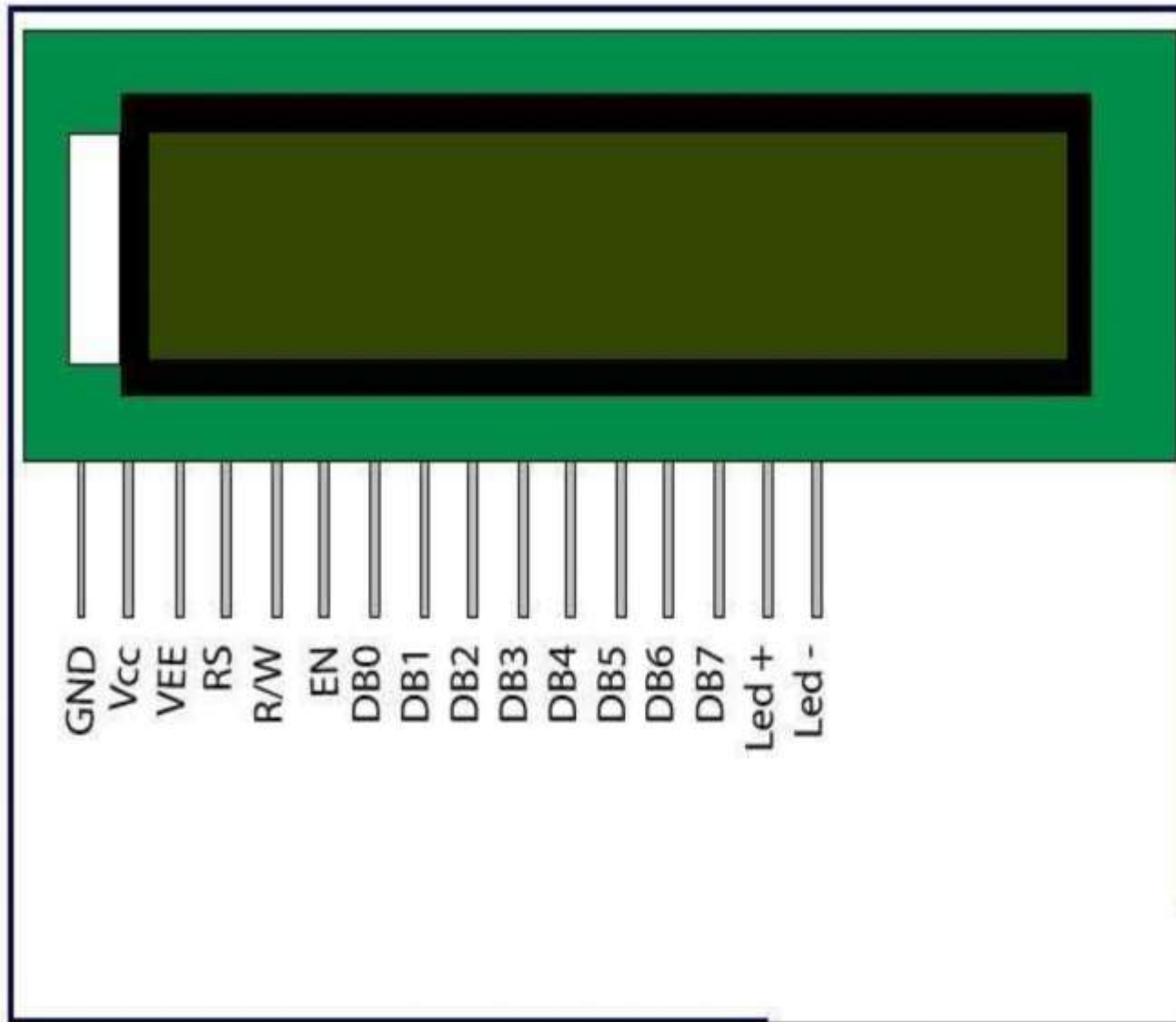
5.3 PIN DIAGRAM:

Fig-6 Pin diagram

6.CONCLUSION:

The proposed robot is mainly for helping the sewage workers to keep them from getting influenced by genuine infections due to entering the waste.
The opportunity has already come and gone that this robot found to be executed to clean the sewage pipes everywhere throughout the world.

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