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| Mini-Project Batch No. | **:** | N-18 | |
| Academic Year | **:** | April –August 2022, Even Semester, 2021-22 Batch | |
| Course Name & Code | **:** | Mini Project-2 / 21MP210 | |
| Title of the 1st Sem BE mini-project work | **:** | Smart floor cleaner | |
| Mini-Project Guide | **:** | Deepa NP | Sign : |
| Section in-charge (Mentor) | **:** | Prof. Navya Holla K | Sign : |
| Mini-Project Coordinator | **:** | HOD – Dr. T. C. Manjunath | Sign : |
| Field / area of mini-project | **:** | ROBOTICS | |

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| **Abstract –**  In the current hectic schedule, cleaning houses and surrounding environment is more difficult and tiring. At present, there are floor cleaners which require humans to handle it. Thus, there is a need to implement floor cleaner which works without human intervention. An efficient method to clean the desired area has been implemented through this project. By using this floor cleaner, hazardous places can be cleaned which thereby reduce risks to mankind. This is achieved by implementing an [autonomous system](https://www.sciencedirect.com/topics/engineering/autonomous-system). Here, robotic car which is embedded with a floor cleaner is used. This system has an [ultrasonic sensor](https://www.sciencedirect.com/topics/engineering/ultrasonic-sensor) attached to it, that helps in avoiding large obstacles such as tables, chairs, walls etc. By measuring the distance via this sensor, the car takes the direction where the distance between obstacle and car is more, hence avoiding the collision with the obstacles. The vacuum cleaner is designed with a fan and a pipe is attached to the mouth of the bottle. The entire system is run by batteries.  **Introduction –**  Cleaning the environment around us is one of the important duties of each and every individual. Bigger the area to be cleaned, greater number of people will be needed. Some places will be so dirty that cleaning such areas causes huge impact on health. In the current COVID situation since social distancing has to be maintained, a greater number of people cannot clean together. In this era where digital technology is rising rapidly, mankind is becoming more and more dependent on the same. Since majority belong to the working population, there is always a shortage of time. Since, the Arduino can be coded to cover specific areas, moving the vacuum cleaner in the desired direction and the time taken for the same can be saved as it is possible through the car carrying it.  In this project, an automated floor cleaner is implemented . It consists of a robotic car to which a floor cleaner is attached. Ultrasonic sensor is attached to the front of the car which is used to measure the distance if any obstacle is detected. If suppose there is an obstacle, the car changes its course as per the code. floor cleaner consists of Fan which runs by a battery. At the front of cleaner, a pipe is attached to suck the dust from the floor.  **Objective –**  An efficient method to clean the desired area has been implemented through this project. By using this floor cleaner, hazardous places can be cleaned which thereby reduce risks to mankind. This is achieved by implementing an [autonomous system](https://www.sciencedirect.com/topics/engineering/autonomous-system). Here, robotic car which is embedded with a vacuum cleaner is used.  **Aim –** Allow robot to remove dirt from the floors by avoiding obstacle coming in its path.  **Circuit Diagram & Flow chart –**    **Proposed methodology –**  Robotic car is built by using 4 DC motors they run with the speed provided in Arduino IDE code, it uses motor shield to work in desired speed and direction. [Ultrasonic sensor](https://www.sciencedirect.com/topics/engineering/ultrasonic-sensor) attached to car detects the distance at which obstacle is present in front of it. So, whenever it encounters any obstacles such as walls, tables or any big things that cannot be considered as garbage or dust. Car which carries floor cleaner changes its direction so that it won't crash and destroy itself.  Vacuum cleaner is made up of water bottle, fan, pipe, tape, dc motor.  **Working of the mini project module –**  [Ultrasonic sensor](https://www.sciencedirect.com/topics/engineering/ultrasonic-sensor) attached to car detects the distance at which obstacle is present in front of it. So, whenever it encounters any obstacles such as walls, tables or any big things that cannot be considered as garbage or dust car which carries vacuum cleaner changes its direction so that it won't crash and destroy itself.  **Tools used (hardware / software) –**   |  |  | | --- | --- | | Hardware | Software | | * Arduino UNO * Ultrasonic Sensor-HC-SR04 (generic) * MOTOR DRIVER (L293D) * TT GEAR MOTOR & SERVO MOTOR * RUBBER WHEEL | * Arduino IDE * Arduino cloud IoT app |   **Applications & Advantages –**  • They are majorly used to remove dirt and dust from the floor without any collision.  • Compact in size and easy to store.  • By using this vacuum cleaner, hazardous places can be cleaned which thereby reduce risks to mankind  **Expected Outcome –**  The system is able to remove dirt and dust from the floor effectively by avoiding large obstacles such as tables, chairs, walls etc.  **Flow-line**:- May– Case study, topic search, finalization, approval from guide  June – Starting of project  July-  August- |

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