



# CLEAN SWEEP BOT

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**Abstract:** In order to automate the cleaning of wall- and ceiling-mounted fans, this project proposes a novel fan cleaning machine. Conventional fan cleaning techniques can be dangerous, labor-intensive, and time-consuming, especially in high or difficult-to-reach areas. The suggested device provides an effective, user-friendly solution to these problems.

The revolving brush system and movable arm mechanism of the fan cleaning machine allow it to accommodate different fan shapes and sizes. The brushes are made to remove dirt and dust off fan blades in a gentle yet efficient manner, protecting them from injury and guaranteeing a deep clean. A suction system on the machine collects loosened particles, reducing the amount of dust that spreads while it is in use.

**Keywords:** Arduino, Fan Cleaning, Brushes

## I. INTRODUCTION

An atmosphere that is conducive to health is one that has clean air. Maintaining clean air often involves an often overlooked step. making sure our fans are free of dust and debris. Clean fan blades and motors may circulate dust, allergens, and other pollutants, reducing fan efficacy and negatively affecting air quality.

Fan blade maintenance may be made more efficient and automated using the Sweep Clean Bot, a device that is essentially a fan cleaning machine. Because dust and debris are effectively removed, it ensures better fan performance, a longer fan lifespan, and higher air quality.

Clean air is crucial for a healthy home and work environment. One often-overlooked part of preserving clean air is keeping our fans clear of dust and dirt. Dirty fan blades and mechanisms can circulate dust, allergens, and other pollutants, lowering air quality and fan efficiency.

The Sweep Clean Bot, also known as a Fan Cleaning Machine, is an ingenious technology that automates and simplifies the process of keeping fan blades clean and efficient. It improves air quality, increases fan performance, and extends fan life by effectively eliminating dust and debris. Fan Cleaning Machine is a unique way for keeping ceiling fans pristine with little effort. This cutting-edge technology was designed to make cleaning easier.

## II. LITERATURE PAPER

[1]. Manisha Rajesh Mhetre, Bhargav Chaudhari, Samarth Bhalake, Prabhat Bhasme, Bhagyashri Joshi has proposed "Sensor Based Socio-Economical Low-Cost Autonomous Groung Wiper Robot For Cleaning".The automated room temperature regulated fan uses a systematic approach that integrates many components for maximum performance. Initially, the LM35 heat sensor is used to continually monitor ambient temperature and provide real-time data to the Arduino Uno microcontroller. The Arduino examines this temperature data and compares it to a predetermined threshold; if the temperature rises beyond this threshold, the Arduino operates the fan to cool the room.

When the temperature reduces to the appropriate level, the Arduino turns off the fan, ensuring a comfortable environment. This feedback loop not only assures accurate temperature adjustment, but it also increases energy economy by reducing needless fan activity. The system may also be extended with features like user- defined temperature settings and remote control capabilities.

[2]. Michael Anderson, Xue Li has proposed

The study of "Constructing and Analyzing a Smart Cleaning Machine with IoT Capabilities for Home Upkeep,". provides a thorough examination of a sophisticated IoT-based intelligent cleaning equipment targeted at increasing home cleaning quality.

This revolutionary technology solves the laborious and time-consuming aspect of manual cleaning, particularly in difficult locations such as beneath mattresses and sofas. The machine's key features include remote monitoring via mobile devices, which improves cleaning efficiency and allows customers to supervise operations from anywhere and at any time.

The cleaning machine has a novel mosquito eradication mechanism that uses a photocatalyst to attract and kill mosquitos while purifying the air. The design has a clever cleaning mechanism using both micro controller.

[3]. Kübra Seda Kimyager, Yasin Ömer Bıdık has proposed "Controllable Cleaning Robot with Bluetooth that can Detect Obstacles." The fan cleaning machine is designed with a strong framework that holds the Arduino,

motors, and sensors, assuring stability throughout operation. The turbo fan is positioned strategically to maximize airflow and suction, successfully catching both tiny particles and bigger trash. Two DC motors power the robot's mobility, and they are designed to modify speed and direction depending on real-time data from the HC-SR04 sensor, allowing for smooth navigation around obstacles and tight places.

To improve cleaning efficiency, the robot has a dual-action mechanism: as the fan vacuums, the sponge attachment mops the floor, delivering a complete cleaning solution in a single pass. The system's energy management is enhanced by the use of rechargeable batteries, which are tiny but powerful enough to sustain.

[4]. Farzana Binti Dusuki has proposed "Design and Development of Innovative Ceiling Fan Cleaner ".The technique for producing the ceiling fan cleaning machine takes a thorough approach, beginning with the selection of high-performance materials. Microfiber is chosen for its outstanding capacity to capture dust and allergens, whilst ABS plastic is used for its durability and lightweight qualities, making the gadget easy to use. Aluminum is used in the design to give structural stability while adding little weight, making the machine more user-friendly.

The design phase stresses ergonomics, with the goal of designing a tool that allows users to clean ceiling fans from the ground. This removes the need for ladders, thus lowering the danger of accidents and injuries when cleaning. The prototype goes through thorough testing to determine its performance in various cleaning conditions, guaranteeing that it satisfies.

[5]. A. Arun Negemiya, P. Aswathraj, S. Balaji, M. Hariharan has proposed "Semi-Automatic Glass Cleaning Machine for Dirty Windows".The fan cleaning machine process entails creating a device that uses a mix of brushes and suction mechanisms to efficiently remove dust and debris from the fan blades. The machine is designed with a lightweight chassis for mobility and changeable components to accommodate various fan sizes. The technology uses revolving brushes to scour the blades and a suction system to collect loosened particles, resulting in comprehensive.

### **III. METHODOLOGY**

The fan cleaning machine uses a systematic method to maximize efficiency and flexibility. The machine has a spinning brush mechanism that softly but efficiently removes dust and grime from the blades of wall and ceiling-mounted fans.

This system has a flexible arm mechanism that allows the brushes to adapt to different fan shapes and sizes, guaranteeing thorough cleaning coverage. This automated procedure not only increases cleaning efficiency but also decreases manual work and exposure to airborne dust, making it a great option for maintaining fan cleanliness in both residential and commercial areas.

### 3.1 BLOCK DIAGRAM

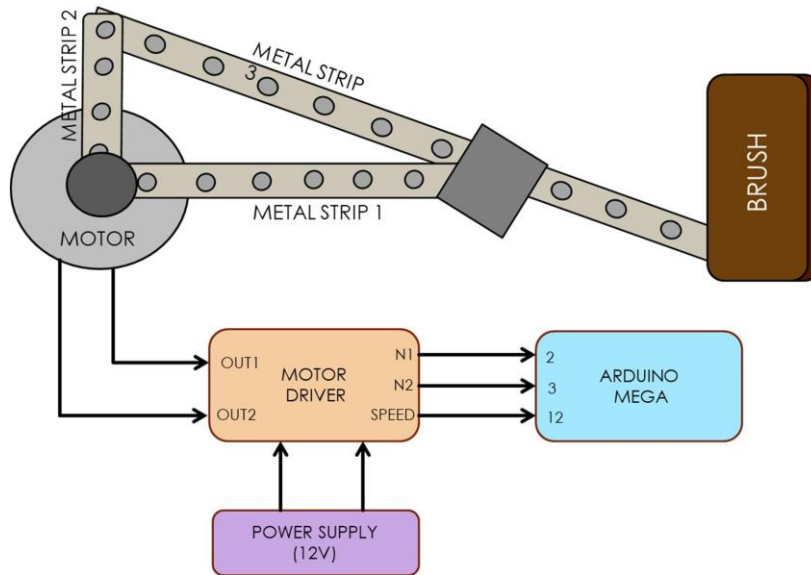


Figure.1: represents the block diagram of Fan cleaning machine using Arduino in which we have used the components Brushed DC motors, Motor drivers, Arduino Mega ,Metal Strip and Brush.

### 3.2 WORKING

Motor Activation: The motor turns on and starts moving. Linear Motion: The linear actuator may extend or retract to provide linear motion. The hammer mechanism transfers rotating motion to sweeping linear motion. Cleaning wings are linked to the hammer mechanism. Repeat the procedure to completely clean all blades. Deactivate the motor to complete the cleaning operation

### 3.3 FLOWCHART

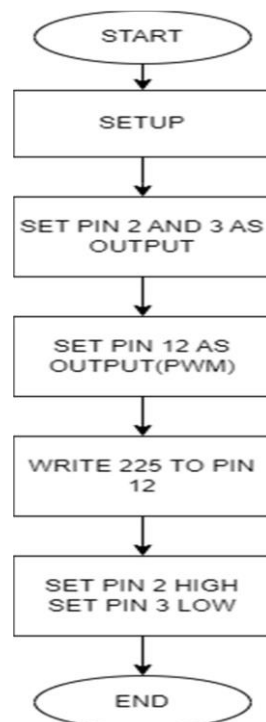


Figure 2 represents the flowchart of Fan cleaning Meachine.

## IV. RESULTS

The prototype of the proposed system is shown in Figures

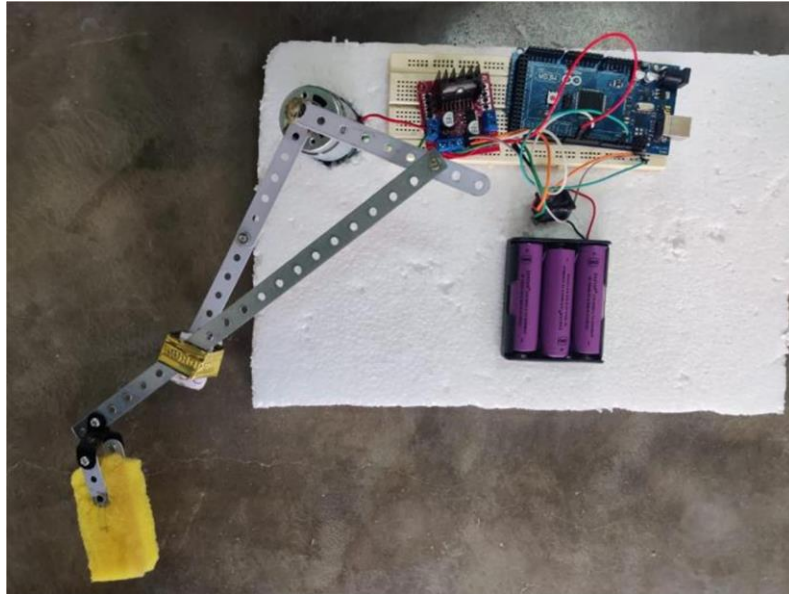


Fig1: System of the project with the complete connections.

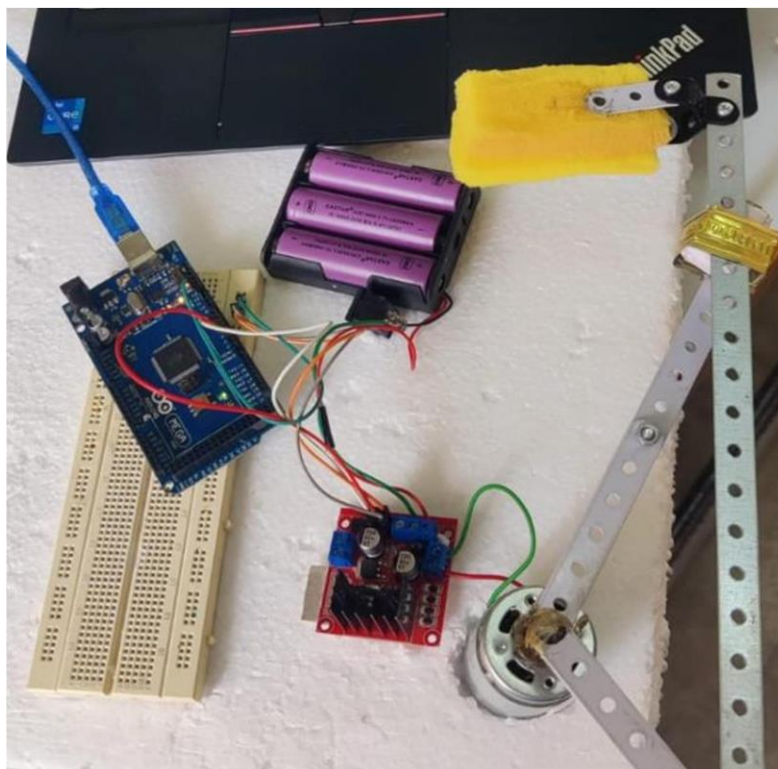


Fig 2. Connections of Arduino with Motor Driver and DC motor.

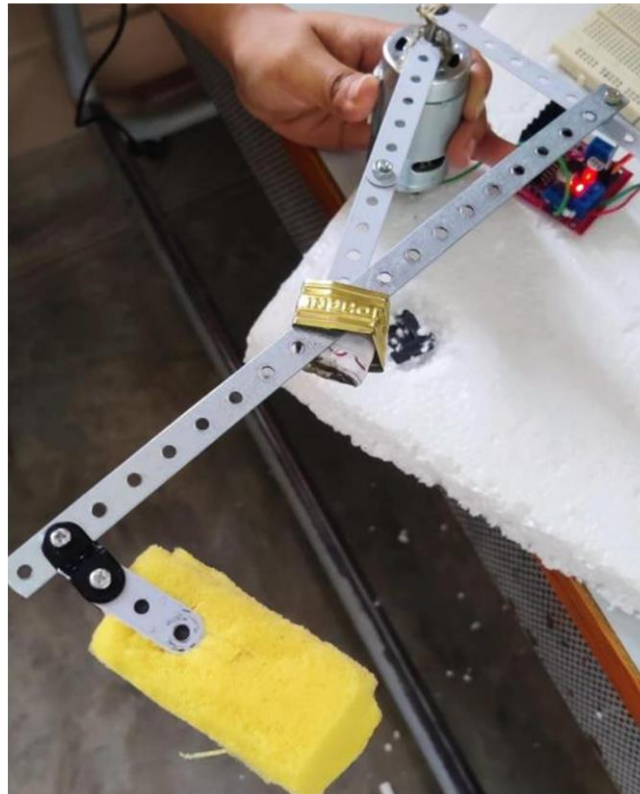


Fig 3. working model of Fan clean ,Meachine

## V. APPLICATIONS

1. Residential Use
2. Commercial Settings
3. Industrial Environments
4. Healthcare Facilities
5. Educational Institutions

## REFERENCES

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