

Basic Details of the Team and Problem Statement

Ministry/Organization Name: AutoDesk

PS Code: SIH-1444

Problem Statement Title:

Develop a Smart Glass Cleaning Robot that efficiently and quickly cleans dust from high-rise buildings, ensuring hygiene.

Team Name: High Risers x360

Team Leader Name: Garv Kumar

Institute Code (AISHE): U-0747

Institute Name: Chandigarh University

Theme Name: Robotics and Drones (Software)

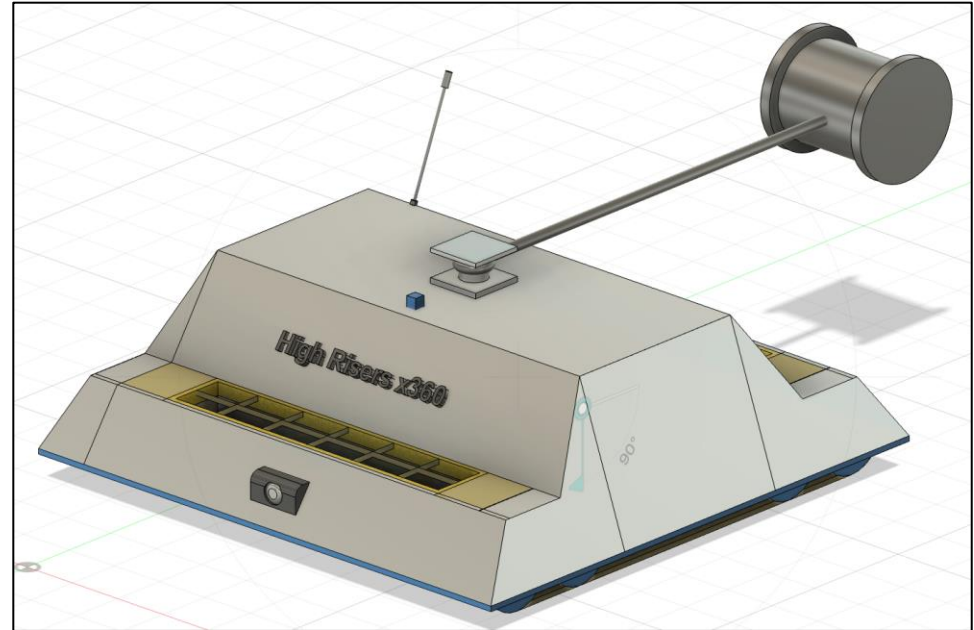
Idea/Approach Details

Describe your idea/Solution/Prototype here:

Our Idea is to create Simple yet Effective High Riser Cleaning Robot with that makes it **highly effective** and **scalable** at the same time.

The approach is as follows :

1. The **prototype** will be hanged from the top of the building.
2. It will be either controlled by **AI** with integration of **IOT** or Human.
3. It will get power from integrated wire in pulley rather than Battery.
Cost effective, increased work capacity & No E-Waste.
4. **Autonomous** or **Semi autonomous** depends on necessity .
5. **light weight** (Aluminum exterior) and **aerodynamic design.**



Describe your Technology stack here:

1. **Fusion 360**
2. **3D Modeling**
3. **IOT (Internet of Things)**
4. **Basic Electrical and Electronic Engineering**
5. **Machine Learning & Artificial intelligence (AI ML)**

Idea/Approach Details

Describe your Use Cases here

1. **Skyscrapers** : Cleaning the glass panels on Mutli-Storey Buildings.
2. **Glass Structures** : Tall and Flat glass structures.
3. **Solar Pannels** : on Rooftops as well as in Solar Fields.
4. **Business** : Business based profitable design.
5. **Safe cleaning** : no human lives are at risk.

Revenue stream

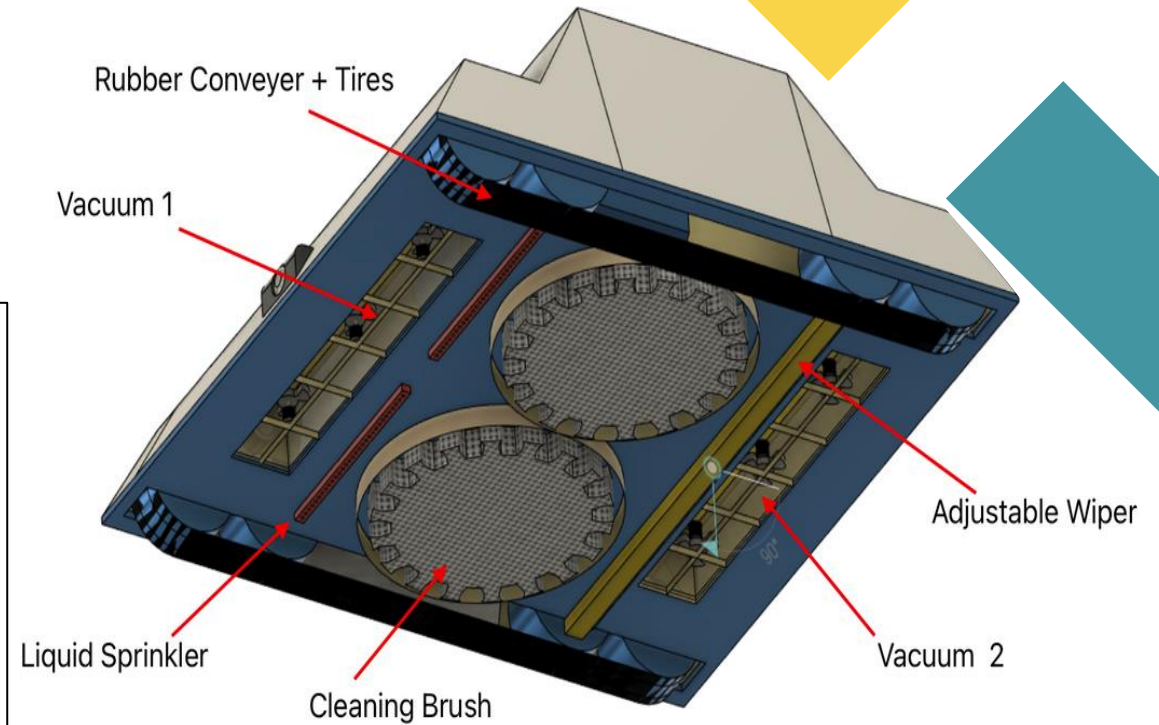
- Service and business based prototype design.

Describe your Dependencies / Show stopper

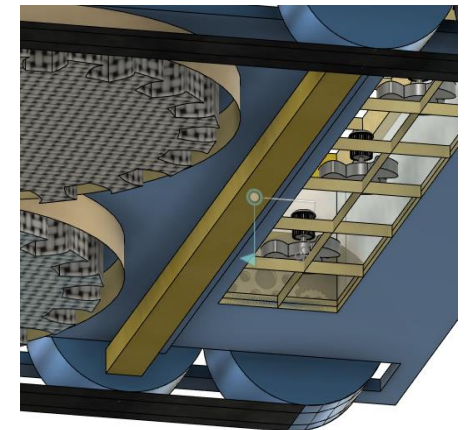
1. **Power Supply** : Continues supply from integrated wires.
2. **Supervisor** : monitoring working is both a valuable advantage and essential dependency.
3. **Quality of components** : Aluminum (exterior cover) and relabel electrical components
4. **Control unit (CPU)** : autonomous working (AI & IOT)

WORKING

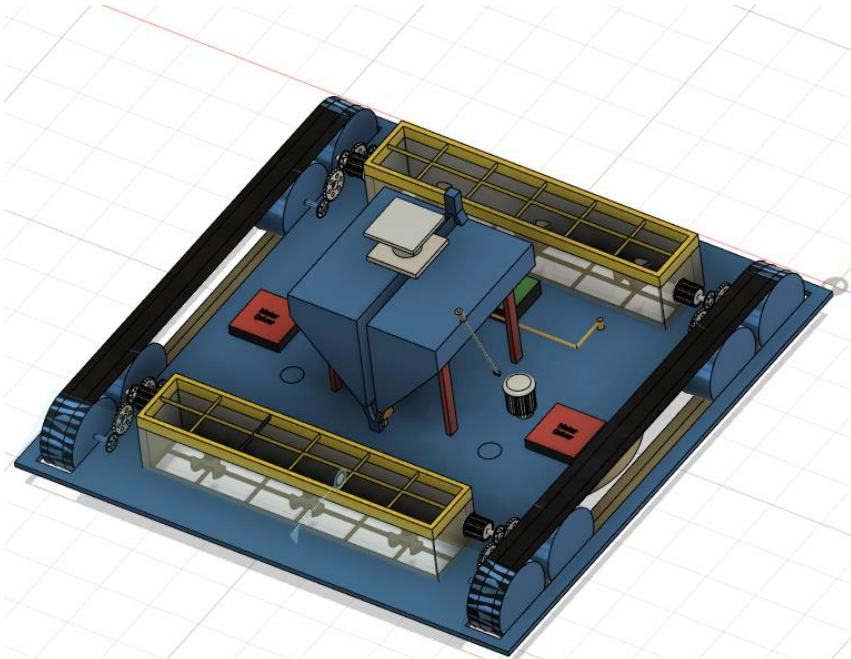
- Camera detects the area needed to be cleaned
- The vacuum cleans the dust particles.
- The cleaning brushes clean the window with cleaner.
- Adjustable Wiper clean the excess liquid.
- Adjustable wipers work only on wet areas and on dry areas they fold inside to avoid scratches on glass pane.



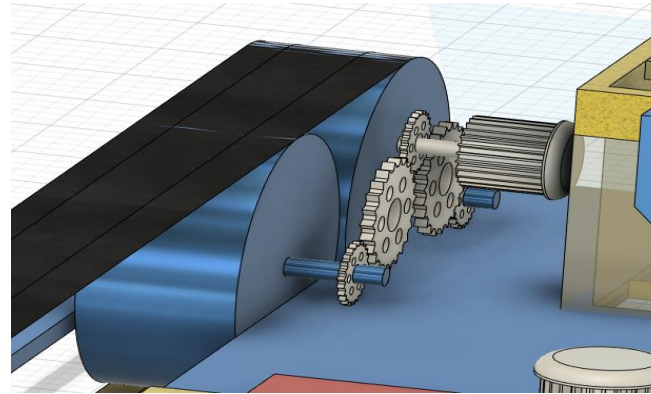
Adjustable wipers



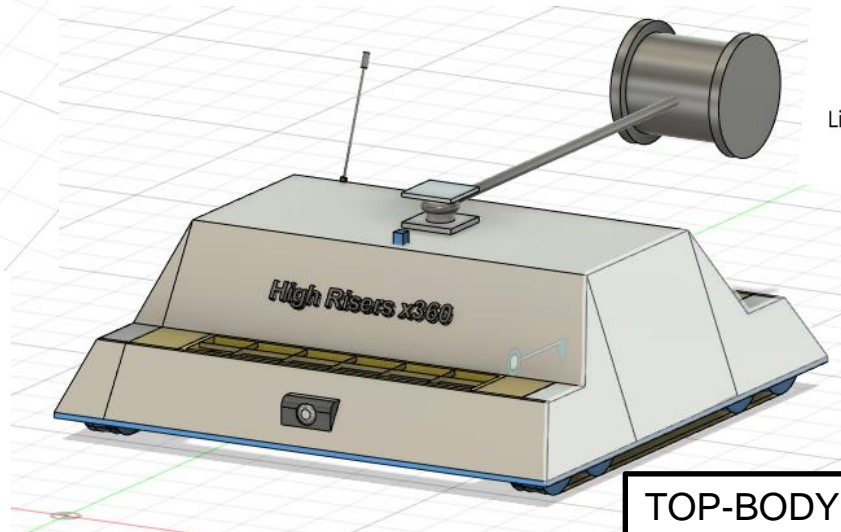
CONCEPTUAL SKETCHES AND IMAGES



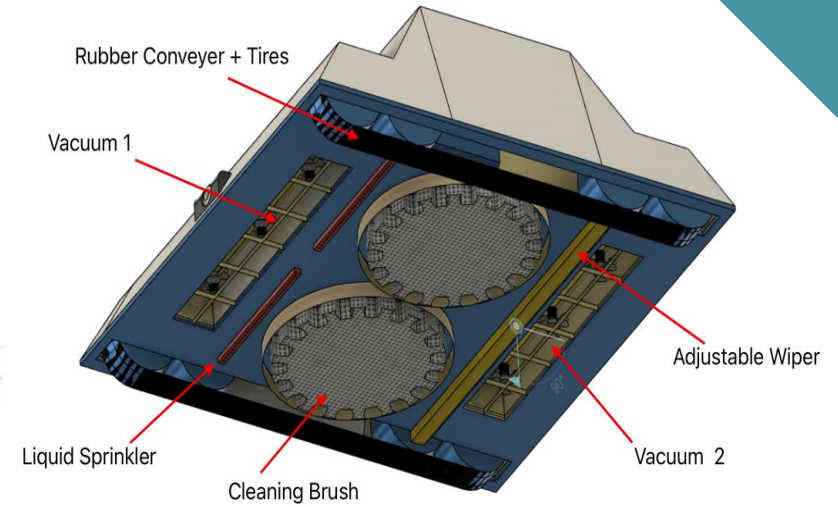
INTERIOR SKETCH



TIER-GEAR SYSTEM SKETCH



TOP-BODY SKETCH



BOTTOM-BODY SKETCH

ADVANTAGES



Issues with the solutions available in the market :

- Big size
- High cost
- Limited working time

Our solution:

- ❖ Compact: Dimensions = (1 x 1 x 1)m.
- ❖ Portability: The robot can easily be moved
- ❖ Cost Effective: Removing the concept of batteries hence reducing the cost.
- ❖ No E-Waste : The robot generates minimal waste as there are no disposable batteries .
- ❖ More Cleaner capacity : 10L of cleaner capacity

Team Member Details

Team Leader Name: Garv Kumar

Branch : BE Stream : CSE AIML Year : II

Team Member 1 Name: Shivam Kumar Kaushik

Branch : BE Stream : CSE Year : III

Team Member 2 Name: Sujal Dua

Branch : BE Stream : CSE Year : III

Team Member 3 Name: Ishita Verma

Branch : BE Stream : CSE Year : II

Team Member 4 Name: Abhinav Karn

Branch : BE Stream : CSE Year : III

Team Member 5 Name: Movin Naurd

Branch : BE Stream : CSE Year : II

Team Mentor 1 Name: Type Your Name Here

Category (Academic/Industry): Expertise (AI/ML/Blockchain etc): Domain Experience (in years):

Team Mentor 2 Name: Type Your Name Here

Category (Academic/Industry): Expertise (AI/ML/Blockchain etc): Domain Experience (in years):