

Problem Definition & Validation

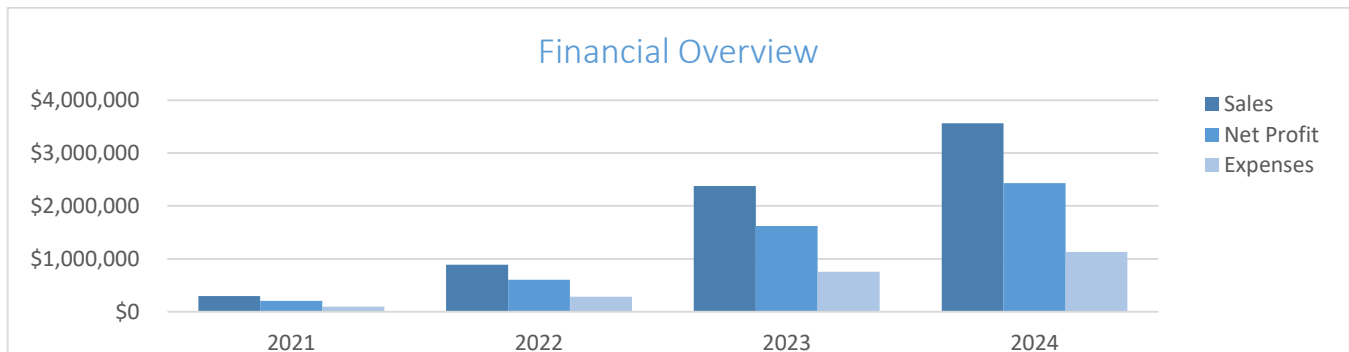
High-rise buildings have technical and economic advantages in the areas of high population density. One of the most important problems around high-rise buildings is the cleaning of exterior windows and facades. The current solution which is provided by most companies is the expert cleaner. Since big heights are involved for window cleaners, a large array of equipment is required to protect from incidents, but it doesn't need to say, this was not a safe way to clean windows of high-rise buildings and in addition, it is slow, available only in warm seasons and cleaner based service quality.

Solution

Our innovative solution is a cable-driven robot in which its movement is done by cables and rotating actuators under a controlling algorithm. The position and speed of the cleaner end-effector are controlled by the main controller and actuators at the corners of the building facade. After installation, the robot gathers the 3D information of the facade of the construction including the exact position of the windows, bulges, and indents by a 3D scanner. The 3D information is used to optimal control the position, speed, and depth of the end-effector during the cleaning process.

Highlights

CDRoboWipe is optimized to access the exterior windows and façade of high-rise buildings which in comparison to other solutions is safe, flexible, affordable, fast, precise, low cost, low energy consumption, easy to install, and maintenance. The prototype of CDRoboWipe has been developed.



Objectives



Team

Alireza Torki

CEO & Founder
Civil Engineering, M.E.
Construction, Project Manager &
Executive Manager, in Tahkim Khak
Omran, Static and Dynamic
Estimation Specialist

Zahra Khosravi Zaniani

CTO & Co-Founder
Control Engineering, M.E.
Automation Specialist in Regional
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Robotic System Design Specialist

Mohammad Reza Annabi

CMO & Co-Founder,
Mathematics, Diploma
Chief Executive Officer of Sonar
Behin Paya and Sonar Lastick
Company, Branding Development
and Advertising Specialist

Mission Statement

CDRoboWipe's mission is to provide a high-quality cleaning service to medium-rise buildings, high-rise buildings, and skyscrapers in a safe, flexible, affordable, fast, precise, low cost, low energy consumption manner.

Keys to Success

Best Customer Service, Competitive Cleaning Service, Flexible & Affordable Customer Support, Innovative Solution, High Quality Service

