

GROUP 11: SMART HOME WINDOW

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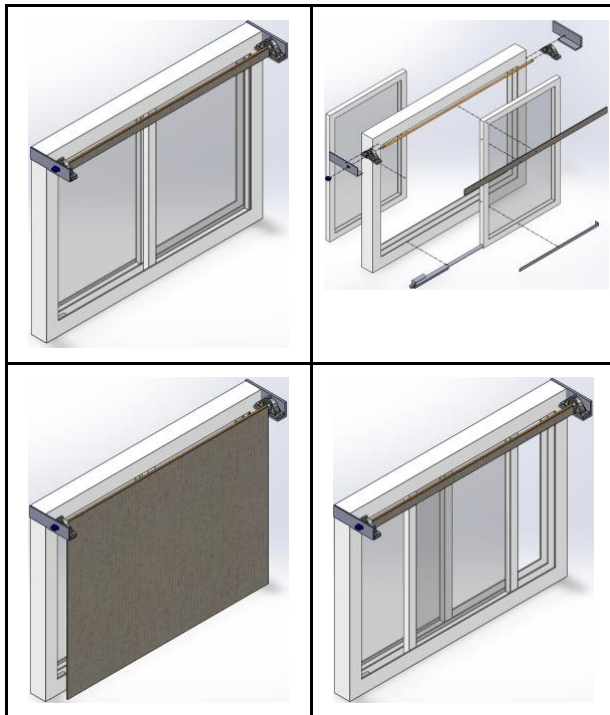
PROJECT NEED

The operation of conventional windows along with their coverings can be a tedious low level task. Leaving windows and window coverings in the incorrect mode can also lead to property damage, safety risks, energy loss, and economic waste. As such there is a need to address this problem using smart technologies to operate windows conveniently and intelligently.

PROBLEM STATEMENT

Due to the tedious nature of opening and closing windows along with their coverings, there exists a need to develop a device or system that intelligently automates the operation of home windows and its coverings to provide convenience for the occupant while preventing the consequences of leaving them in an unwanted state.

DESIGN SOLUTION



DESIGN NOVELTIES

Online Weather API: Device receives online weather data to predict extreme weather conditions. Device will close windows to prevent damage to the belongings in the home in case of harsh weather.

Weather Sensors: Device integrates sensors such as temperature sensors, light sensors, and rain sensors to detect local weather changes.

Geofencing: Location-based tracking in mobile application to ensure device is securely locked while users are out of their home.

Mobile App: Modern mobile application to give user an interface to access different program modes (Smart, Automatic and Manual).

Smart Mode: Window and blind adjusts levels based on environment sensors and online data.

Automatic Mode: Window and blinders operate based on preset times given by user.

Manual Mode: Allows user to change the position of the window and blinds in 10% increments.

Mechanical Safety Override: Linear actuator bracket is attached using a pull pin to ensure easy disassembly in emergency scenarios.

TREND OF HOME AUTOMATION

Home automation devices have been becoming increasingly popular within the past decade. These days, there's a smart version of pretty much every home device you can think of. Examples of these devices are robotic vacuums, Nest learning Thermostat, Ring video doorbell, smart locks and many more. In general, these products connect to the internet, so you can control them from your phone. The main objectives of home automation are convenience, safety and energy/cost efficiency. The home automation market was worth US\$5.77 billion in 2013, predicted to reach a market value of US\$12.81 billion by the year 2020. This trend is due to the smart technologies made possible by mechatronic engineering advances.