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LCOVE Smart Space Saving Furniture

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Abstract - *The main aim of this paper is to propose a system that helps the people to maintain their regular diet. Space-Saving furniture spaces are designed in order to satisfy different demands at less area. Also, in contemporary era, inner city congestion is an increased problem, and the preference of Space-Saving furniture spaces is an ideal approach in order to improve the situation. Space-Saving furniture space/Space-Saving furniture forming space, the chosen topic defines in this case is multipurpose usage of a particular area with different forms of Space-Saving furniture used, to justify or help the given area to achieve the purpose of ease and satisfy the demands required to be fulfilled. Large spaces have become a thing of the past as more and more people opt for the city-dwelling lifestyle. With the rise of small-space living, compact furnishings are sitting on the forefront of home decor. The economic recession and ensuing credit crunch caused consumers to increasingly look for products that offer more for less. Designers of space-saving furniture found success within this environment, as these innovations appealed to homeowners and apartment-dwellers alike.*

Key Words*: *Internet of things, Smart devices, Speech Recognition, Web-Development.

1. INTRODUCTION

Space-Saving furniture use is probably been introduced in India but has not been in consideration to use in our day-to-day life. In place like Mumbai, ` where u get the job easily than a place to stay". This statement has been used many times and its somewhat true. Mumbai has been overpopulated for quite a time now the reason is being the financial capital of India many people immigrate from other states towards Mumbai for their career or education and to get a good job, & now the state is that people have small spaces even if they find space to live in and the rates are at boom. In such a situation they can't have bigger space in their budget according to their needs. So, there we need a solution for all of these problems. Space-Saving furniture is evolved greatly in foreign countries like China, America, etc. but mostly in China because most of their spaces are too small to live in but mostly in India there are only few stores that actually even sells this kind of furniture and few who bases their whole house into Space-Saving furniture environment of this study.

2. RELATED WORKS

Well, we were sent to one of the furniture factories in Indore Industrial area and talking with the Owner we captured his concern for the need of an optimal space saving furniture as most cities face problems with continuous population growth, while human needs remain the same or increase. Urbanization growth and marketing prices force citizens into less space. These problems lead to the congested appearance of small houses and flats. Many apartments fail to provide spaces with quality and comfort. So, we decided to build something which could address this issue.

3. DISADVANTAGES

- The relatively slow lifting speed! A Scissor lift cannot move faster than feet per minute.
- The hydraulic oil can emit an unpleasant odor when it becomes too warm from overuse.
- Hydraulic lifts tend to be a little noisier than other elevator systems.
- The lift movement is generally not as smooth as with other lift systems!
- The cost of product other places is high.

4. PROPOSED APPROACH

In this cloud bed ascends and descends with the help of lifting mechanism described below with certain load limitations with implementing the technical part. Scissor lifts are used to safely move workers vertically and can be moved easily to different locations. Scissor lifts can be moved easily and safely from one place to another. This will help reduce any physical effort and fatigue of your workers who operate them and instantly saves time. There are several types of scissor lifts for specific jobs, such as electric powered scissor lifts are best known for indoor usage while diesel powered scissor platforms

A. Smart Movement of Furniture

In this module, it starts by allowing the user to use mobile application as well as the web application, Also the user should be able to control the system using Verbal speech either with Google Assistant or with Alexa.

B. Object Detection

The main aim is to have a secured system so to avoid any accidents, also visibility of system status is an important aspect of user experience and design. We used weight sensor to collect the objects data and alert the user with a buzzer or beeper. Also an LED light is attached just for extra Visibility purpose.

C. Technical Specification

Technical established details - 1.

1. Furniture frame size – (queen size) 5ft x 6 5ft. 4
2. Basic material assumed - MS 2x1 pipe + MS 1×1 pipe.
3. Design of the basic MS frame – rectangular.
4. Lifting column mechanism - Option 1- Scissor Lift with electric linear actuator Option 2 - Electric hoist machine.
5. Weight capacity along with all peripherals - 250kgs (approx.).
6. Guiding Rails - Parallel guide rails on the sides with wheel support.
7. Wooden paneling on the top for beautification.

• Target Price: 12,000 excluding wooden paneling

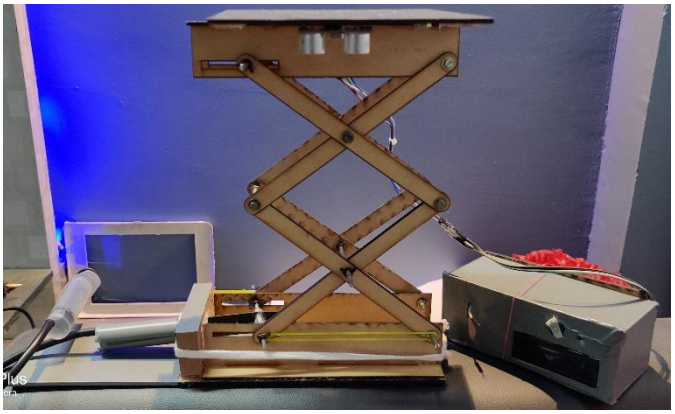


Fig -1: Working Prototype

D. Web, App & Physical Deployment

The user can access the Space-Saving Furniture using 3 different ways. The first using the User Interface implemented on Mobile as well as the web. The second is using a manual touch button. All the above-mentioned technologies are well implicated in the prototype. Below are the images for the same.

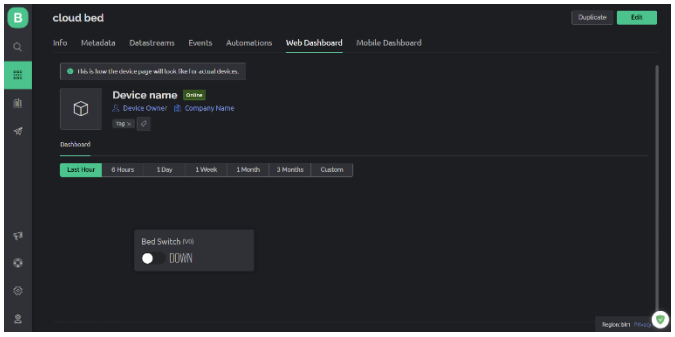


Fig-2: Web Deployment

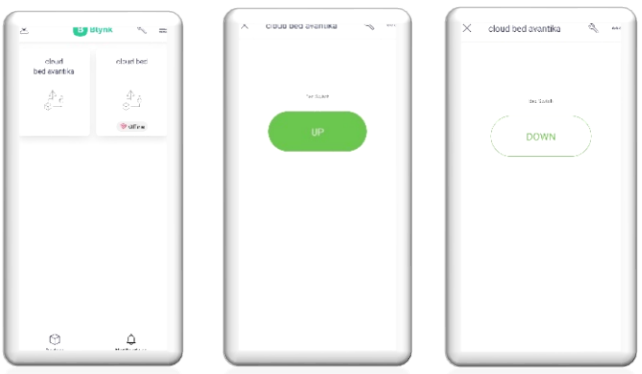
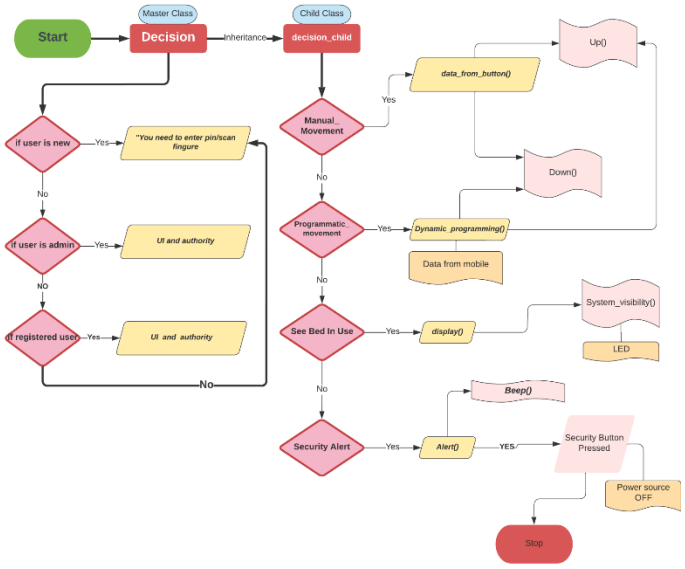


Fig-2: Mobile Deployment

4. WORK FLOW FOR PROPOSED SYSTEM



- ✓ The space prior to the chosen topic, a 1 bhk flat is chosen that will be located in Andheri west side area. 3 members live in that area. Mother father and their daughter.
- ✓ Now the client demands to have separate two work space area (tuition room for teaching, office work space and meeting area for lawyer work) and also a child space with the living requirements.
- ✓ The client to this space is Mr. Ronit Ahuja and Mrs. Mona Ahuja who are 35- and 29-year-old an advocate and yoga instructor respectively and their 5-year-old daughter Kaira Ahuja. Residing in Andheri west side of Mumbai, in 1 bhk flat in water heights.
- ✓ This study is in respective of Mumbai lifestyle...Means it is to be designed to be fast according to fast pace life and easy to use to their comfort and living.
- ✓ My aim to study this particular topic is to learn more about this topic, this can be used in future aspect to the drastic stage of our living has become and also to show people a new and improved and convenient style of living moreover to those people who are having troubles living in small conceited areas.

5. APPLICATIONS

1. Cost efficient.
2. Easy to use by all the people
3. Portable.
4. Easy Installation
5. Identification Objects Currently.
6. Consumers can easily use it with voice commands.

6. RESULT OF BLACK-BOX TESTING

S. Nos	Test Cases	Response Time	Usability	Reliability
1	Linear Implementation	Very Quick	95%	95%
2	Durability	_	80%	85%
3	Ease of Use	_	95%	95%
4	Movement with Button	Very Quick	95%	95%
5	Movement with Speech	Quick	95%	95%
6	Movement with UI	Very Quick	95%	95%
7	Object Identification	Very Quick	99%	99%
8	Alert Sound	Very Quick	95%	95%
9	System Visibilty	Quick	80%	80%
10	Smooth Motion	_	80%	80%
14	Aesthetic & Minimalist	_	80%	80%

7. FUTURE SCOPE

In future, the current application

(i) Can be used for all people.

(ii) We can develop it all these features into an android application.

(iii) We can link it with Hand-gestures

(iv) We can add a Deep Learning model which can predict opening & closing times of furniture and act accordingly.

8. CONCLUSION

1. We have used Blynk Cloud for Websites.
2. We have used Blynk app for Mobile Application.
3. For the Integration of Voice, we had used IFTT along with Google Assistant.
4. We made the physical Model in Fab-lab.
5. Hence, we were able to successfully implement the all tasks given to us by industry person.

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10. Project Plannin

10. REFERENCES

[1] Weight Tolerance

The capacity of life is to hold the bed in cloud without person is 250kgs (approx.)

[2] Frequent Maintenance

Characteristics that place the business or project at a competitive disadvantage.

[3] Failure Psychology

Risk of bed collapsing from the roof creates the image in the mindset

11. Prototype Image