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Survey on Automatic Cloth Folding Machine

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Abstract: In this paper, we have given a detailed study about the existing literatures. The study reveals that till now only Folding of clothes machines are available. The systems are capable of folding only one size of the clothe. So, we conclude that Robotic Arm can be developed to keep clothes on the folding table and folding machine should be able to fold different sizes.
Keywords: Folding machine, Physically Handicapped, Folded, Clothing market.

I. INTRODUCTION

An estimated 1.3 billion people experience significant disability. This represents 16% of the world's population, or 1 in 6 of us. Overall, 2.21% of Indian population has one or the other kind of disability. This means 2.68 crore (26.8 million) people in India are disabled. In that 20% people have locomotor disabilities. The people without arm are facing many difficulties in day-to-day life. One such challenge is folding their own clothes.

First commercial automatic cloth folding machine was founded by Gal Rozov, an Israeli software engineer who decided that folding laundry was a tedious chore that could be done effectively by a robot. In 2010, Rozov quit his job as a software developer and product manager and spent two years developing his laundry-folding device. After that many companies started to make commercial automatic cloth folding machines and these machines are being sold for large amount of money**.** Modern society uses all of the high-tech electrical and electronic equipment on a regular basis. This work is a burden for many and sometimes tiring depending on the amount of clothing and number of people in a house and physically challenged handicapped peoples. In addition, most of the clothes folding machine in market are either for industry use or too expensive. We are trying to build portable automatic clothes folding machine with cheap cost to serve most people as well as people who are physically handicapped. The operation of the machine requires less manpower involvement, which is significantly useful for people who are not willing to organize their clothes. Typically, someone folds their garments by hand using the traditional way but for the physically handicapped people it's so difficult to fold their clothes. Depending on the amount of clothing and the number of occupants in a house, this chore is a hardship for many and can occasionally be exhausting. Additionally, most of the garment folding machines on the market are either excessively expensive or designed for industrial use.

In order to serve the physically handicapped people, we are attempting to construct a portable automatic clothing folding machine at a low cost. Less labor is needed to operate the machine, which is quite helpful for those who are not able to organize their garments.

II. RELATED WORK

In [1], N. Gomeshal et al photovoltaic-powered t-shirt folding machine, which is an automated device that can fold a t-shirt in around two seconds. Finally, compared to manual folding, the t-shirt folding machine has proven to be more effective. Performance parameters are length of flaps, speed of motor, sensor reaction time. Advantages of this device it folds cloths at high speed that it saves lot time, it is efficient, it has less Complexity. The disadvantage of this device it is Semi-Automatic and requires human intervention.

In [2], Suraj Shah et al fold the t-shirts using a sorting technique. Microcontrollers, which are easily interchangeable and readily available in stores, have been used to automate folding. Processor speed and mechanical unit size are performance criteria. Advantages of this device include it is very fast at work, it is automatic and less Complex. The disadvantage is it requires supervision.

In [3], Xudong li et al works on the safety of people during the folding of clothes, they employ infrared and optical sensors to detect human intrusion and language to construct the software. Performance parameters are the time and size of the cloth. Advantages of this device include it is efficient, it time and less complex. The disadvantages of this device LOS is required code.

In [4], Bansari Shetye et.al the procedure of folding a t- shirt is simple to utilize and beneficial. This project's main goal is to automatically fold t-shirts by just hitting a button. Fully automated, all that is required to fold a shirt is to set it on the flip board and press the start button. The shirt will be folded in a matter of seconds. Performance parameters are time and size. Advantages of this device include it is efficient, cost less for this and it save time. Disadvantage of this device is Semi-Automatic.

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In [5], Mukesh P. Mahajan et. al works on using mechanical gear motors in folding machine. It's used flap controlled by servo motor. Performance parameters are time and size of the cloths. Advantages of this device are it Save time; it is less efficient. Disadvantage of this device Semi-Automatic requires human intervention.

In [6],Yiwei Liu et al ,The fundamental goal of this machine, according to Yiwei Liu et al., who discuss its technique and design, is to minimize human involvement through the use of a folding machine. It must complete in just 20 seconds and have two places for patterns. Performance parameters are cost, time and size. Advantages of this device it possesses the ability to do a job with the least amount of wasted effort, save time and less cost. The disadvantage of this device it is requiring human supervision.

In [7], Hariyanti E et al automatic clothes folding machine uses concept of three microcontroller-based folding options for an automatic garment folding device. Performance parameters are cost, time and size of the clothes. The advantages of this device it is fast, it is able to do a job with least amount of wasted effort and it is very cost effective. The disadvantage of this device it is more complex.

In [8], Hafis, A. S. A. Design of Semi-Automatic Clothes Folding Machine Based on Arduino Uno and uses flip board to fold clothes. In this semi-automatic folding machine is required to set clothes on the flip board and press the start button. The clothes will be folded in a matter of seconds. Performance parameters are cost, time and size. Advantages of this device it is fast, it can do a job with least amount of wasted effort, it is less complex, and it is performing task faster so save lot of time. The disadvantage of this device it is semi-Automatic.

TABLE I: COMPARISON OF EXISTING LITERATURES

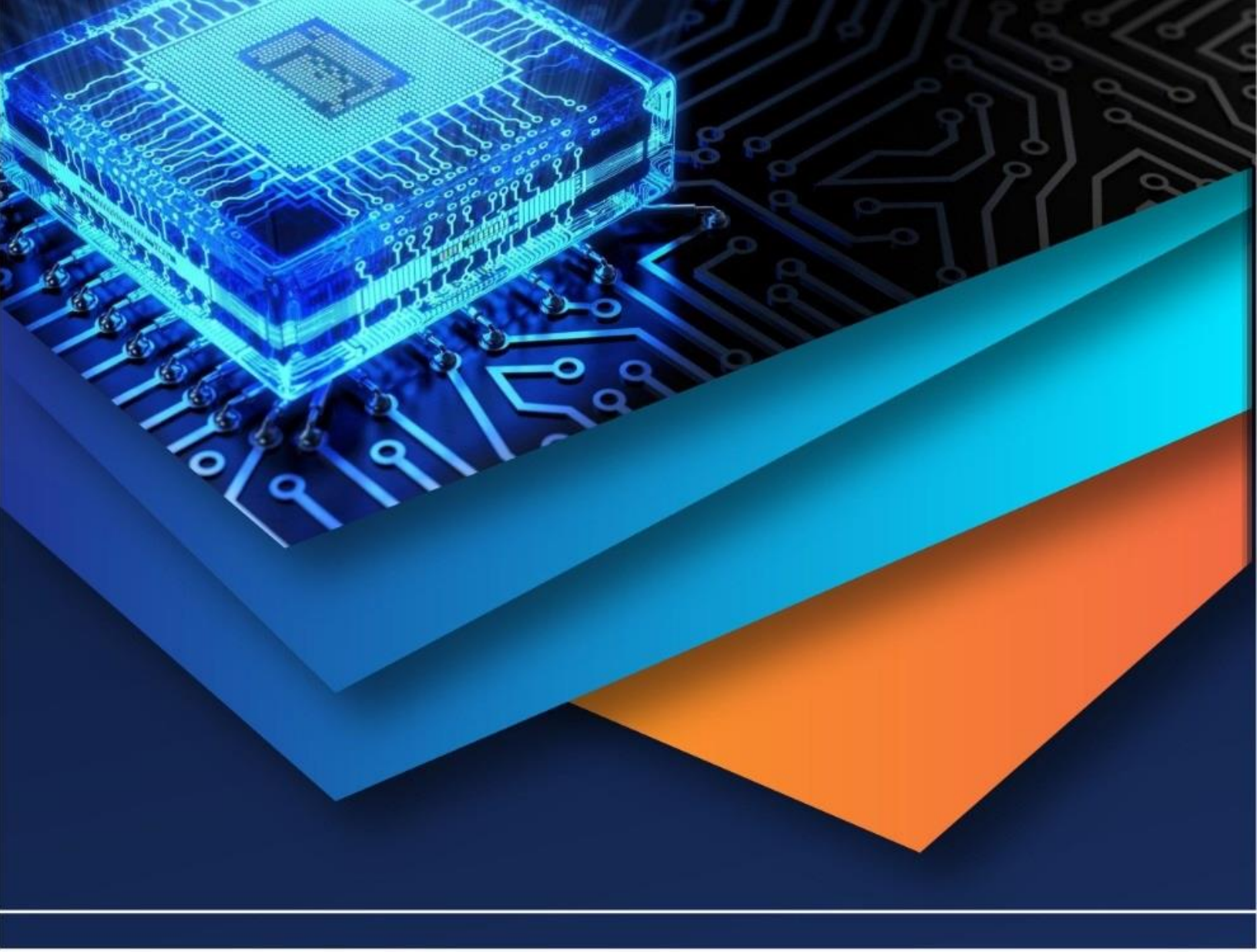
S.no	Title of paper	Proposed method	Performance parameters	Advantages	Disadvantages
1.	Automatic T-shirt Folding Machine (Mukesh P Mahajan)	Folding T-shirts using flaps controlled by servo motors	Length of flaps, Speed of motor, Sensor reaction	• Saves time • Efficient, • Less Complexity	Semi-automatic requires human Intervention.
2.	Cloth Folding Machine (B.Vinitha)	Use of ATMEGA8 control unit to control the movement of mechanical unit	Processor Speed, Mechanical unit size	• Fast • Automatic • Efficient • Less cost	Requires Supervision
3.	Design and fabrication of Automatic T-shirt Folding Machine	Use of Flaps run by servo motors to fold cloths.	Cost, Time, Size	• Saves Time • Efficient	Semi -Automatic
4	Automatic T-shirt Folding Machine (Bansari Shetye)	Use of Flaps run by motors to fold cloths.	Time, Size	• Less- cost • Saves Time	Semi -Automatic
5.	Automatic T-Shirt Folding Machine (Aishwarya Sanjay Dhawale)	Use of Flaps run by motors to fold cloths.	Time, Size	• Fast • Less complex	Semi -Automatic
6.	Automatic cloths Folding machine (S. Divyal)	Use of sensors, actuators	Cost, Time, Size	• Efficient • Less Cost • Saves Times	Human Supervision
7.	Design and fabrication of t-shirt Folding machine	Use of ATMEGA8 control movement of servo motor	Cost, Time, Size	• Fast • Efficient • Cost effective	More Complex
8.	Design of Semi-Automatic Clothes Folding Machine (Hafis, A. S. A.)	Use of Arduino Uno	Cost, Time, Size	• Save Time • Efficient • Less Complex	Semi-Automatic

III. CONCLUSION

From all the above mentioned literature it is conclude that only folding part is available in all existing system Which is still hard to use for a handicapped person. So, we conclude that a robotic Arm can be developed to keep clothes on the folding table and folding machine should be able to fold different sizes which is very much helpful for physically challenge handicapped person.

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