

Control System Flatness Fabric on Double Folding Machine

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Abstract. Increasing the production in the industry can bring the wrong fabric quality on the process of flat rolling cloth. Needs a simulation of prototype that is used as a simulation media that has the same shape and function as the tool or unit. Jointly to know how to work control on flatness of fabric in double folding machine, so as to give description and as media of simulation in industry. Multiply doubled, with this simulation is expected to be a reference and learning in the development of tools that can help the industry to be able to process cloth at the time of production. In application can improve the quality and quantity of production. The research method used in this research. As explained diagram block diagram used is a fabric sensor that is not right, whether the position of the fabric in a tilted / uneven then the electric photo sensor will give info to the arduino to force the servo motor and then the lever to fit the position of the fabric is tilted / uneven to flat back in position. At the conclusion for the future expected to be the tools that will be generated through research will show whether through this simulation can help and develop the process of fabric in the industry.

1. Introduction

Modern era as it is necessary to know the world of industry, especially the textile industry must produce quality and quality of rolls on the fabric. Textile industry in Indonesia has long been developed in line with the development of cloth industry business. This idea can be accommodated by designing a new custom machine or introducing the reconfiguration process [1]. Reconfiguration can be obtained using a robot and it has been used in various ways to fold fabric. In addition, there is a desire associated with the fabric folding machine. When designing a fabric-side control system there is a need to simulate the engine and its interaction with scrolls. The degree of automation in the non-rigid materials industry is still low, as concluded in a survey 96 published research papers on the manipulation of flexible materials, performed by Saadat and Nan. Most of these publications (76%) are related to sheet material and only 58% of them are industry-related. Few of these publications deal with folded fabrics, while the results have not yet been applied to the apparel industry. A study of folding depending on fabric modeling has been guided by Eischen and Kim. The problems that often occur to date make us to continue to think and innovate how to make the results of quality products and quality to give the impression of mutual benefit between the industry and consumers [2]. One of them for the flatness of the fabric is still a lot in the industry that does not care about the quality of fabric rolls result from the final process for double folding machine that serves as folding cloth. The large demand of the market that wants the quality of the neat fabric roll is still a problem today in the industry. Therefore, where the design is done in the form of prototype control system flatness of the fabric on the double folding machine so that the results of the fabric rolls to be neat on the left and right.



2. Methods

As for several stages of the planned project. The system will be shared with two common parts of hardware and software [3]. The software designed at this initial level is only for testing. In the hardware section, consideration of many aspects is very important in terms of size, characteristics, goals, and results. After completing these two important parts, and before integrating the two, some testing should be done on each of the components used. After confirming the perfect circuit, simple program will be tested to microcontroller and all ports are tested and verified.

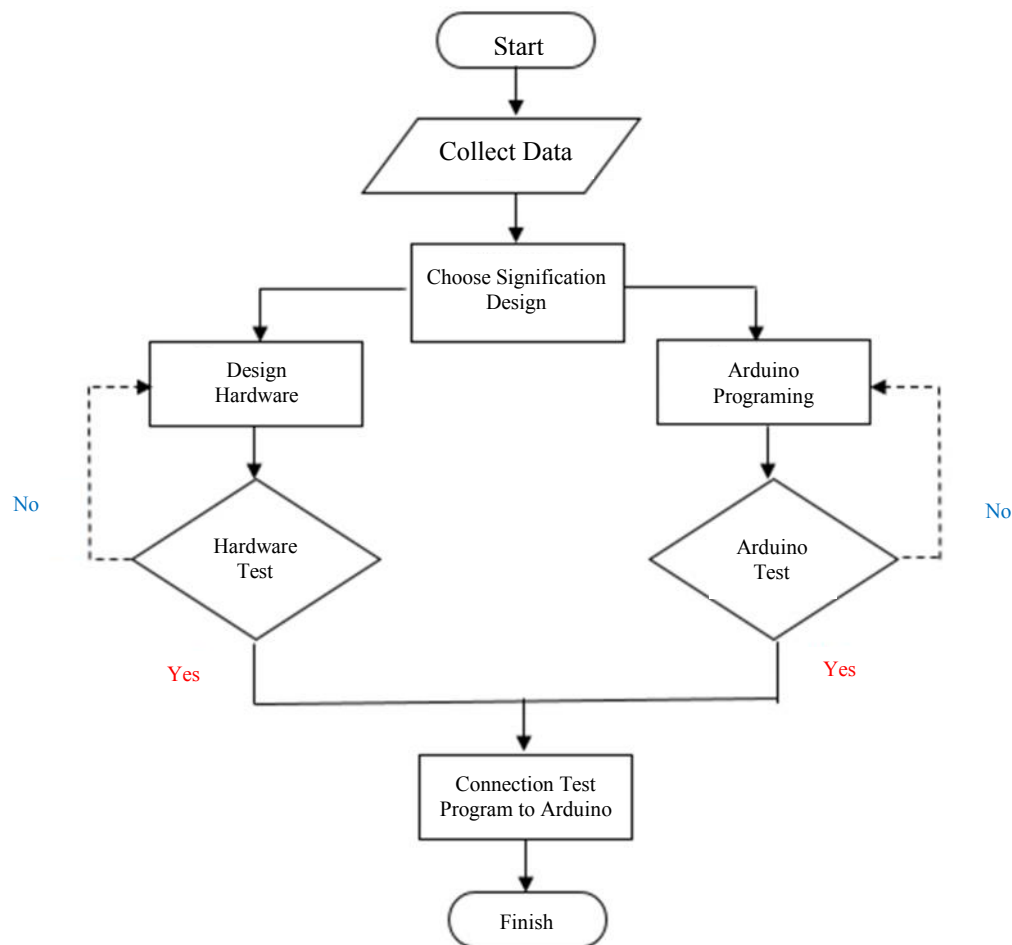


Figure 1. Flowchart method

This prototype process will start as soon as the appliance is turned on the fabric will start rolling up, then when the fabric passes through the electric photo sensor then the sensor will detect whether the fabric is in a tilted state, if the roll position of the fabric is tilted then the photoelectric sensor will give info to arduino MEGA2560 to move the stepper motor, then push the lever / cylinder to adjust the uneven position of the fabric to roll the fabric back flat in position [3].

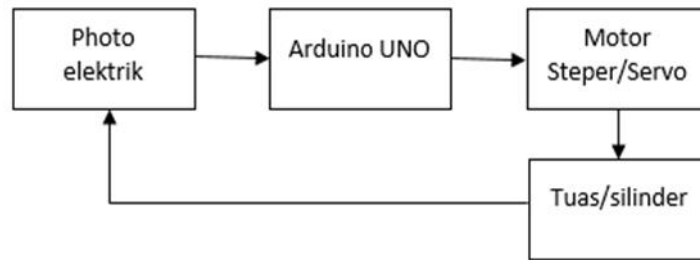


Figure 2. Block Diagram

The first step taken on the design of the prototype is the identification of equipment and materials used. The following table lists the equipment and materials used.

Table 1. Equipment and materials used

No	Name of equipment	Explanation
1.	Arduino UNO	ATMEGA 2560
2.	<i>Personal Computer</i>	Toshiba AMD A8
3.	<i>Photo Eletric</i>	1 unit
4.	<i>Tuas/Silinder</i>	1 unit
5.	<i>Motor Stapper</i>	2 unit

The first stage is the design stage schematic circuit using software fritzing. The second stage is the stage of making the program. In the design of software programs used arduino software. The third stage is to perform performance testing on the prototype whether it is in accordance with the program and control system that has been made.

3. Result and Discussion

The design results are obtained from testing every part of the tool that has been made. The test is performed in accordance with the procedure of using the tool. Testing hardware (hardware), done by doing a repeated testing of each component used. After testing has been obtained hail that all components contained in the tool works well. Software testing (software), this is done by testing to test the program on the tool that has been made whether in accordance with the design. From the results of the experiments conducted concluded that the program arduino run according to the initial plan of the program. Testing overall. At this stage of testing, the steps performed are arranging the control system in the arduino program using the jumper and testing whether the program and the control system is running according to the program command or not. After testing the program and the control system runs according to program commands and tools runs well. However, the problems that often occur when the tool is not running that is wrong in assembling a control system that is not in accordance with the output input of the program created, or there are cables that do not fit the installation.

However, the problems that often occur when the tool is not running that is wrong in assembling a control system that is not in accordance with the output input of the program created, or there are cables that do not fit the installation [3]. Initially there were some problems encountered when first making a prototype model of the fabric flatness control system on an easy folding machine. The most difficult part is choosing the right motor. The motor must be strong enough to lift the folding material. The weight after the cloth is placed on the folding material should also be considered when choosing the motor. Motor also does not have to be high in price as well as easily controlled by microcontroller. Problems also occur when selecting folding materials. The material should not be heavy because the motor will have difficulty in lifting it. The surface of the material must also be slightly coarse so the fabric will not

slip off of it as soon as its wings are rotated. So once tested with a little material, polystyrene has finally been selected as a suitable material because it is very light and also has a rough surface that can keep the fabric fixed on the roll. Another problem encountered is how to attach the folding material to the motor because the motor needs something that attaches to the shaft like a gear system.

4. Conclusion

A new yet simple project was created. The conventional way home hold chorus, in terms of folding the fabric is now done more neatly and nice views. Because this machine is completely automatic and proven with a complete fabric cycle with the push of a button. This machine can help users reduce their load and is very useful for buyers with many fabrics to fold. The project is also useful for some industries, fabric manufacturers and others who need fabrics to fold in a much more tidy way than expensive and expensive CNC machines.

References

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