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AUTOMATIC GARMENTS FOLDING MACHINE

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ABSTRACT

Automatic Garment Folding Machine (AGFM) is a simple and valuable cycle in this universe. The reason for this paper is to overlay shirt simply by squeezing a switch. The AGFM is completely programmed where one need to simply put the shirt on the board and press the beginning switch and inside part of seconds the shirt will get folded. This thought will certainly be a useful for Textile industries, Laundry, etc. This energy and time can be saved by this programmed AGFM and can be utilized in some other work. By large individuals get exhausted for collapsing the garments in the wake after sewing so they dump them for what it's worth in the cabinet. This prompts wreck in cabinet and makes troublesome in discovering garments in crisis case. To survive above expressed issue, a savvy machine will design that will identify the shirt and crease. This AGFM will require less human contribution.

Keywords: AGFM, Laundry, Garments, sewing, savvy.

1.INTRODUCTION

Nowadays, many industries were pushed on the basis of the boundaries of autonomous vision and processing of supple materials like fibers, textiles, and garments. The textile industry hasn't seen much advancement in terms of technology, which will help it reach the gold standard in mechanism supply in the foreign market, which is entirely automation in the textile industry's manufacturing sector. The primary goal is to automate the cloth folding process used in the fabric manufacturing industry. In addition to the automatic folding process of the cloth, this aims to implement greater automation through the design of an

automated sorting mechanism based entirely on the color of the fabric. This will ensure the complete automation of the textile enterprise that was missing. With the existing substances and parts, the device could be built as a good way to add simplicity and most significantly, price efficiency to the machine. The implementation of the whole assembly will be integrated without difficulties with the modern-day equipment being used inside the modern-day machine being used inside the industry without any major adjustments.

2. LITERATURE SURVEY

Yuliyanto agung prabowo et.al [13] proposed the identification of the Flip Folder Folding Machine Using Artificial Neuro Network Method with NARX (Nonlinear Auto Regressive Exogenous) Structure-I. As Folding machine is a tool that is needed in the small and medium scale laundry industry that has a goal for the efficiency of production time. The flip folder is the main component of this tool, which functions to fold the clothes by moving to form a certain deflection angle where the movement process is controlled by the controller. The system modelling process is the first step to study the characteristics of the system. In a dynamic system, the form of linear modelling is approved difficult to obtain a model that represents the actual physical model. Selecting the structure of the NARX (Nonlinear Autoregressive exogenous) model was chosen to obtain the dynamic nature of the system. An estimation method to obtain parameter values from the system used Artificial Neural Networks (ANN), which is a trading scheme to be able to predict the output of a system that uses input data and output.

David Estevez et.al [1] proposed towards Robotic Garment Folding. In this, a Vision Approach for Fold Detection method is utilised as a current trend in robotics. Previously to folding clothes, they have to be unfolded. It is not realistic to perform model-based unfolding, as every garment has a different shape, size, colour, texture, etc. In this paper we present a garment-agnostic algorithm to unfold clothes that works using 3D sensor information. The depth information provided by the sensor is converted into a grayscale image.

J. Stria et.al [7] described the paper as Garment perception and its folding using a dual-arm robot. As Assistive robots need to be able to perform a large number of tasks that imply some type of cloth manipulation. These tasks include domestic chores such as laundry handling or bed-making, among others, as well as dressing assistance to disabled users. Due to the deformable nature of fabrics, this manipulation requires a strong perceptual feedback. common perceptual skills that enable robots to complete their cloth manipulation tasks are reviewed here, mainly relying on vision, but also resorting to touch and force. The use of such basic skills is then examined in the context of the different cloth manipulation tasks, be them garment-only applications in the line of performing domestic chores, or involving physical contact with a human as in dressing assistance.

3.IMPLEMENTATION

The Framework used by the author to carry out this research using foam sheet the main frame that will later house the Arduino Atmega Servo 1, Servo 2, Servo 3, LCD display, Power supply and other components. All other Components mentioned above are

attached to a Foam sheet so that its functionality is more usable. The output module structure is shown in Fig1.

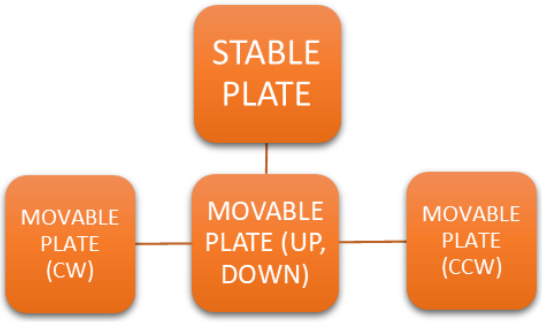

Fig 1. Output module structure

Regarding this, the placement of components on the frame, there are components such as Arduino atmega, Servo 1, Servo 2, Servo 3, LCD display, Power supply and other components. All of the components mentioned above are attached behind this foam axis, starting from the power supply which is provides electricity to the Arduino at mega and then connected to several components such as lcd display, IR sensors, servo 1, servo 2, servo 3, So that the function can run smoothly by using this order.

The process of connecting tools and applications that will be created. the tool and application Arduino IDE is an abbreviation of integrated development environment which is a software writing programs, compiling and uploading programs to the Arduino board. For basic applications using the Arduino IDE, the tools and materials used are: Computer, Arduino board, USB cable.

4.METHODOLOGY

In this section, the folding procedure is explained briefly. It shows the planning for folding clothes. Folding task is assumed to start with two corners of clothing grasped by the manipulator to be spread and hung.

First, clothes are spread on the plate of the tool. This operation includes the way to the corners of the clothes are grasped to swing up and failing down. It seems like the way of handling a sleeping sheet and the way to clothes is fallen down on the working table by changing the position and attitude of the arms starting from the status of hanging down. However, both operations are influenced by fabric properties and state, making manipulation complex and decreasing reliability. This system transfers, hung clothes from the tool along with the face of the plate, followed by sliding along the plate to remove wrinkles via plate friction.

The positioning plate is grasped by the robot hand. The positioning plate is placed on clothes. The hand is opened to release the plate and the plate regrasped to burden a nearly constant load of the plate on clothes.

The Positioning plate is placed on clothes, holding them in place, and moved and rotated in transfer, then the target position of the fold transferred to the folding position of the tool. Clothing deformation is checked using visual information. Although elimination of wrinkles and shaping are done in the course of folding. The block diagram of methodology is shown in Fig2.

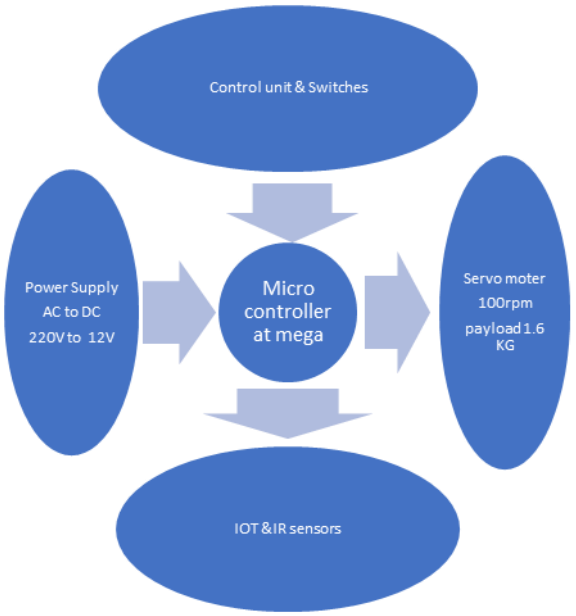

Fig 2 Block diagram of Methodology

5.RESULT AND ANALYSIS

An analysis has wrapped up for testing and the consequences of the ends incorporate the get together of a AGFM as a microcontroller with a servo drive that should be possible with 3servo relying upon the size necessities of the garments, for garments that are over burden, introduced on each contrary side of the current servo arrangement. The AGFM can encourage textile industries, laundries, etc. specifically in crafted by folding garments to be more productive on schedule and energy also by collecting the data of the folded garments from AGFM for the warehouse storage purpose. The implementation of Arduino IDE is shown in fig 3.

Fig 3 Implementation of Arduino IDE

Automatic folding machine will be more efficient in the time and energy. It will be automated the operation. The sample simulation results are shown in fig 4.

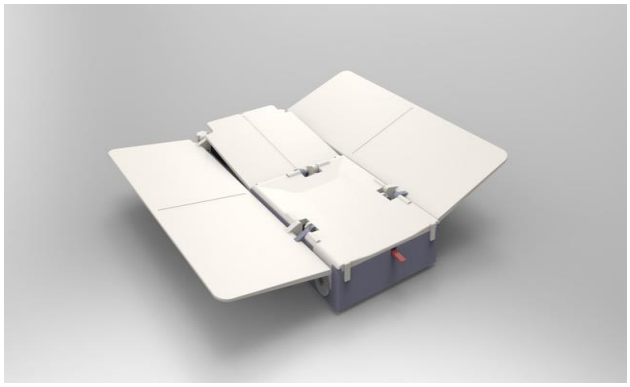

Fig 4 sample simulation results

6.CONCLUSION AND FUTURE SCOPE

When the cloth folding machine is used the time required to fold the cloth is reduced to half of the time compared to manual. Also, it is a step to increase in production to the sales market as early as possible compared to manual folding also saves man-power.

In future, detect folding failures methods has to considered in order to recover from them. And also have to focus on more complicated scenarios dealing with garment which is not spread on the table.

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