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## Automatic Laundry Folding Machine (A.L.F.M)

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### ABSTRACT

One of the household chores that all housewives, regardless of whether they work or not, must perform daily is folding clothes. When there are many clothes to fold and need to fold them correctly based on the type of clothing, folding clothes takes a lot of time, and elderly people find it difficult to do this. Finding the appropriate garments will be challenging when more and more clothing is not folded. Folding clothes can be hectic and tiring for some people as it involves physical work and skills. Saving time and less effort in folding clothes are the main goals of this innovation which lead to creation of Automatic Laundry Folder Machine (A.L.F.M). The Automatic Laundry Folder Machine (A.L.F.M.) was designed to work as intended, with servo motors, Arduino Nano, and Uno serving as the major technological foundation. By pressing the correct button for the right type of clothing to fold, this invention helps the user while they wait for the machine to finish. In other words, user can simply press the corresponding button on the panel to fold a specific type of fabric. The primary focus would be on the elderly because some of them might not have the energy to complete physical tasks around the house. They would be able to work more effectively because of the additional time and energy saved. The device that will offer a neat one-way fold for clothes may be used by busy employees at the clothing department location. Starting at RM200, the pricing is within reach. All in all, the A.L.F.M. wants to help everyone fold their garments more quickly and easily.

**Keywords:** Folding clothes; less effort; conveniences; custom-made; time-saver

### INTRODUCTION

For daily life, clothing is crucial. To maintain the clothing, it always being washed, dried, and folded. There was already automatic washing and drying but folding isn't automatic. Not just for industry, but also for domestic use, automated clothing folding is anticipated. There are many types of clothes folding machines on the market and most of them are large and expensive. As a result, numerous research projects and field tests on automated machines for folding garments have been conducted. As conducted in [1], the automatic folding machine is done by two small robots that folded the clothes from the edge of the table with control from a small camera. This requires some space and several separated gadgets to function.

As introduced by [2], they have similarity with this innovation but limited to one kind of clothes. However [3] introduced a robot to fold clothes that horizontally lying on the flat surface and while hanging vertically from the gravity vector. There also some folding machine powered by photovoltaic as mentioned in [4]. According to [5], washing and drying equipment is widely available. So why can't the awful folding procedure be similarly automated? Over the years, researchers have investigated it, and it has been discovered that robots just struggle with the

task of folding laundry.

The main objectives of this invention that resulted in the creation of the Automatic Laundry Folder Machine (A.L.F.M.) were to save time and require the least amount of work to fold clothing. This is because household chores, particularly folding clothes, take a long time, a lot of effort, and a certain level of ability to execute. As a result, it is thought that the A.L.F.M can compete with existing folding machines due to its low cost and simplicity of use.

## INNOVATION DEVELOPMENT

This invention uses a standard clothes folder as a starting point and advances it with the most recent technologies to save time over manual folding. It is enhanced using an Arduino Uno, which serves as the brain, and six servo motors, which drive the clothes-folder elbow actuator. Clothes folding is a quick task that may be accomplished with just one button.

Two buttons make up A.L.M.F, which are used to fold clothing and trousers. The Arduino Uno, which serves as the brain, will send a signal to the servo motors to flip the plates in the proper order when the button has been depressed. Different types of clothing will be folded in different sizes according to a particular sequence order. People will find it easier to fold garments in the right sizes and ways with this.



**Figure 1:** Automated Laundry Folding Machine (A.L.M.F)

## COMMERCIAL POTENTIAL

Due to the previously described issues, the goal of this innovation is to assist people in completing household tasks, notably folding clothes, in less time and with less effort. Due to the hurried lifestyle of today, it is thought that this kind of technology is greatly in demand.

The elderly, occupied workers, stay-at-home mothers, and other people who need to complete basic household tasks with less time and effort will be the target consumers. Given that the current market's products are more expensive while offering essentially the same characteristics, this product is anticipated to enjoy very high demand due to its low pricing. Additionally, this device is hassle-free and easier to use.



Based on the grade of the material used, the product's suggested selling price is roughly starting from RM200, and a profit margin of about 35% of the cost is to be expected. The suggested price is very low compared to products that are already on the market with the same characteristics and therefore can generate high sales. Depending on the customer's preferences, the A.L.F.M can be designed specifically for them. Consumers have a choice in the machine's size, plat material, and motor type. The pricing will change as a result.

## CONCLUSION

In conclusion, A.L.F.M achieved its goals in providing tools that help fold clothes faster and with less effort. As for future improvement, adding a scanner to the machine will be one of the special features. It is used to detect the type of clothes thus automatically fold the cloth accordingly without the need to press the button manually.

Additionally, it could be enhanced by including an automatic laundry dispenser and receiver. The dispenser is utilized so that the machine doesn't require a person to load it up with fresh garments each time a piece of fabric needs to be folded. The receiver is designed to hold onto the folded clothing until every piece of clothing has been folded, allowing the user to simply wait until every piece of clothing has been folded before gathering it all up at once.

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