

Research Article

Teaching and Learning Innovation in Management of Technology and Innovation: Automated Rain Detector Clothes Rack

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Keywords:

Automatic clothes rack
Rain sensor technology
Smart-home innovation
Automated drying system
Household convenience

Abstract: This project introduces an innovative automatic clothes rack designed to protect clothes from rain using smart sensor technology. Unlike traditional clothes racks, this system is equipped with a rain detector, automatic moving wheels, and parking sensors that allow the rack to detect rain and move automatically to a covered area. The innovation helps working individuals and housewives avoid clothes getting wet when unexpected rain occurs, even when they are not at home. By automating the drying process, the system saves time, energy, and laundry costs while ensuring clothes remain dry and clean. The invention combines convenience, practicality, and smart-home technology to improve daily household activities.



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1. INTRODUCTION

Some people may find it challenging to dry their clothes outside in an unstable atmosphere due to unpredictable weather conditions like rain. Most working people worry about their clothes drying outside because sometimes it does not follow weather predictions. They do not have time to change into new clothing if it is pouring outside.

This project is about the invention of a clothes rack with an attached rain detector and automatic wheel installed together. The objective of the project is to ease and give conveniences toward housewives out there especially for working housewives that normally arrived at their homes late. They do not need to worry anymore if the weather changes into rainy because an automated rain detector clothes rack will keep the clothes dry by moving automatically into the covered area. This product will

be a good idea to be accepted and immediately mesmerize the society and will deliver satisfaction for sure. It has a great new function that can aid in increasing the quality of life.

The existence of “Automated Rain Detector Clothes Rack” because of several problems that happened with normal clothes racks. In this project, we identify two problems which are: clothes are easily affected by rain and people are busy waiting a long time for clothes to dry.

First, clothes are easily affected by rain. People normally use the clothes rack to dry clothes under the sun. This happens for people after they wash their clothes to make sure clothes are not wet. The main problem is when they dry clothes on a clothes rack under the sun, a sudden rain will wet the clothes. This will make them need to repeatedly wash and dry again clothes indoors using a fan.

Second, people are busy waiting a long time for clothes to dry. The clothes hanging in the sun wait a long time to dry, some people are not going to wait for the clothes to dry because they are busy doing other work. Unexpected rain can happen when they are not at home or did not notice the rain and it will wet all the clothes. Even though some people hire a maid to pick up clothes, the maid is also careless sometimes.

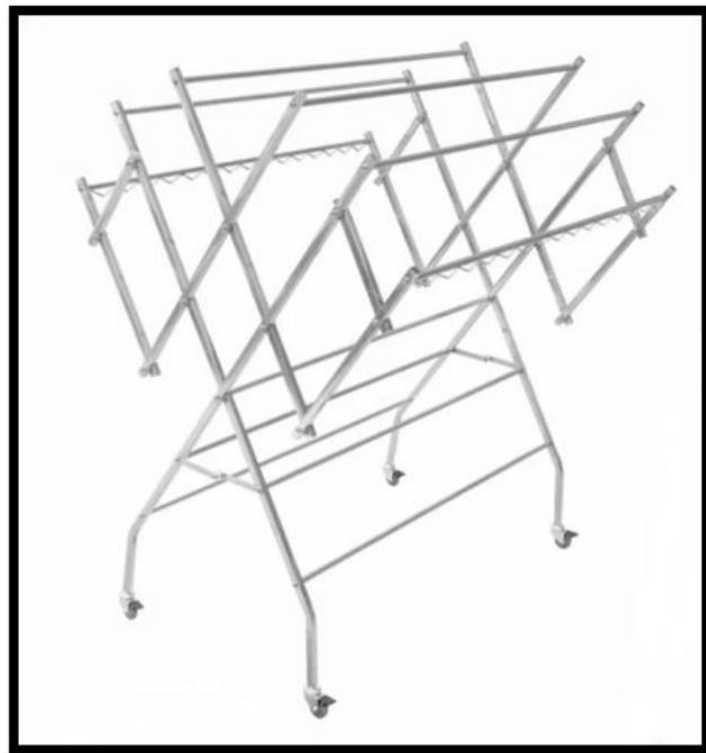


Figure 1. Normal Clothes Rack.

Figure 1 shows an existing clothes rack that causes several problems which are clothes are easily affected by rain and people are busy waiting a long time for clothes to dry. As we can see, the design of normal clothes racks is too exposed with rain without modern technology nowadays. The wheel is also old school and difficult to move the clothes rack when the clothes are still wet.

2. METHODOLOGY

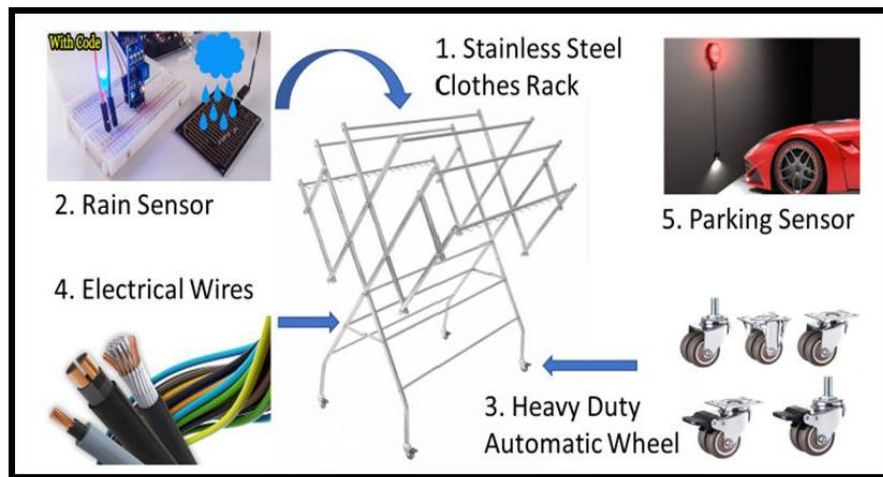


Figure 2. Process Design.

Figure 2 displays the process design for our new product which is “Automated Rain Detector Clothes Rack”. Firstly, we used a stainless-steel clothes rack which is the existence product. We choose stainless steel because it is not easy to rust when exposed to rainwater. Secondly, we added the rain sensor above the clothes rack for easy detection of rainwater. Thirdly, we use a heavy-duty automatic wheel to move a clothes rack with heavy clothes. Fourthly, we connect all the technology with an electrical wire on the clothes rack, and lastly the parking sensor is to stop clothes racks under the covered area.

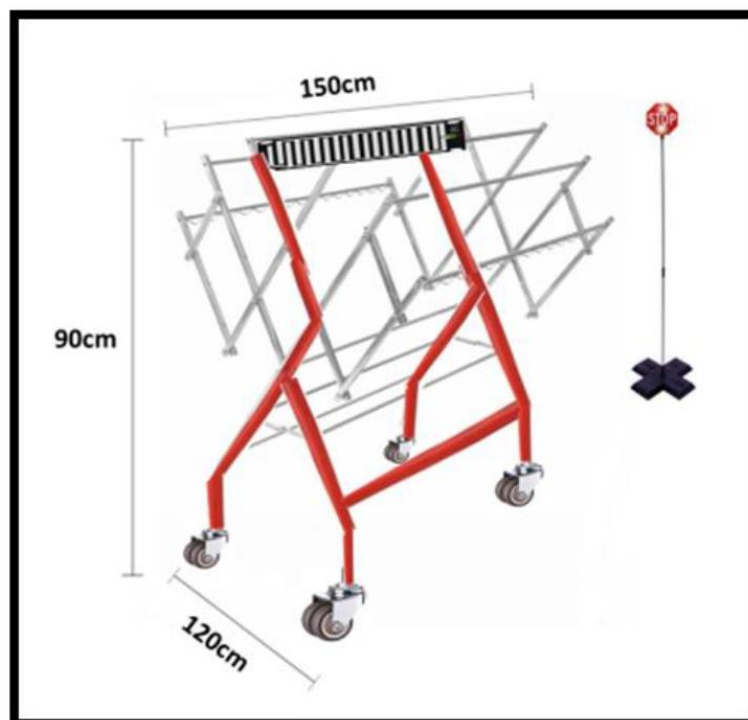


Figure 3. Physical Design.

Figure 3 is a physical design for our new product which is “Automated Rain Detector Clothes Rack”. The physical design can be a measurement for the product. The “Automated Rain Detector Clothes Rack” size is 150cm length, 120cm width and 90cm height. The weight for this product is 40kg

and it can accommodate a weight capacity up to 80kg. The movement for this clothes rack to parking sensor can reach 10 km speed after the rain sensor is activated.

The function of “Automated Rain Detector Clothes Rack” is that there is a rain detector and automatic wheels are installed on the clothes rack to detect rain and move. A drop of rainwater will activate a rain sensor to warn that rain has started, the clothes rack wheel will automatically move to the covered area and it will stop by the parking sensor.

3. FINDINGS

The Automated Rain Detector Clothes Rack introduces a unique combination of rain detection technology, automatic mobility, and smart parking sensors within a household drying system. Unlike conventional clothes racks that require manual monitoring and movement during weather changes, this innovation automatically detects rainwater and moves the clothes rack to a protected area without human intervention. This smart automation feature provides a practical solution for households, especially in Malaysia’s unpredictable weather conditions.

Another unique aspect of this innovation is its integration of mobility technology into a traditional household appliance. The installation of heavy-duty automatic wheels enables the clothes rack to transport heavy wet clothes efficiently and safely. In addition, the use of stainless-steel materials improves durability and resistance to rust, making the product suitable for long-term outdoor usage. The parking sensor further enhances operational accuracy by ensuring the rack stops safely at the designated covered location.

The innovation also demonstrates originality by transforming an ordinary household item into a smart-home solution that supports modern lifestyles. Most existing clothes racks in the market only focus on basic drying functions without incorporating intelligent weather-response technology. Therefore, the Automated Rain Detector Clothes Rack provides a more convenient, time-saving, and user-friendly experience, particularly for working individuals and busy households. This innovation reflects the growing trend of integrating automation and smart technology into daily household activities.

4. DISCUSSION

4.1. Benefits to Mankind

The Automated Rain Detector Clothes Rack offers significant benefits to society by helping users protect their clothes from sudden rain and reducing the burden of constant weather monitoring. The system automatically moves clothes to a sheltered area when rain is detected, ensuring clothes remain dry, clean, and protected even when users are away from home. This reduces stress and inconvenience, particularly for working individuals and elderly users who may have difficulty moving heavy clothes racks manually.

In addition, the innovation contributes to time and energy savings. Users no longer need to repeatedly wash and dry clothes due to unexpected rain exposure, which indirectly reduces water and electricity consumption. The automation process also minimizes physical effort and improves household efficiency by simplifying daily laundry management. As a result, the product promotes a more convenient and productive lifestyle for consumers.

Furthermore, the invention supports technological advancement in household living by encouraging the adoption of smart-home innovations. The product enhances quality of life through practical automation while promoting safety and comfort. Environmentally, the reduction in repeated washing activities can help conserve natural resources and reduce household utility costs. Overall, this innovation benefits mankind by combining convenience, sustainability, and intelligent technology in everyday household applications.

4.2. Potential of Commercialization

The Automated Rain Detector Clothes Rack has strong commercialization potential due to increasing consumer demand for smart-home and automated household products. In Malaysia, unpredictable weather conditions create a continuous need for practical laundry management solutions, especially among working families, apartment residents, and urban households. This product addresses a common daily problem, making it highly relevant and marketable to a wide range of consumers.

From a business perspective, the product can be commercialized through online platforms, home appliance retailers, and smart-home technology distributors. Marketing strategies such as social media advertising, demonstration videos, and influencer promotions can increase consumer awareness and product acceptance. The product may also attract collaboration opportunities with property developers and smart-home system providers who aim to integrate modern household technologies into residential projects.

In the long term, the innovation has potential for further technological enhancement and product diversification. Future developments may include smartphone connectivity, solar-powered charging systems, weather forecasting integration, and mobile application control. These improvements can increase product competitiveness and expand its market reach internationally. With affordable pricing, practical functionality, and growing interest in automation technology, the Automated Rain Detector Clothes Rack demonstrates strong potential to become a successful commercial smart-home product.

5. CONCLUSION

This automated rain detector clothes rack is a must-have item for all Malaysian households to help with day-to-day operations. This is a product that can assist housewives and working people in ensuring that clothing hung outside the house remains dry and clean. Social media advertising will be used as a marketing tool in the promotion of this product to all Malaysian people. With reasonably priced technology, this invention will undoubtedly be able to compete in Malaysia and serve every home's needs.

In conclusion, this automated rain detector clothing rack would be useful to many housewives and working people. This technology will revolutionize Malaysians' clothing management habits, as well as their ability to manage time and life more effectively without being worried about wet garments caused by rain. As a recommendation, every house should have this invention and feel the difference between using a traditional clothes rack and an automated rain detector clothing rack. They will be surprised that the money used to buy this invention is the best investment for them and their family to make their life-style better.

Acknowledgments: We express our sincere gratitude to everyone who contributed to the successful completion of project innovation especially lecturers, team members, friends, and family for their cooperation, encouragement, prayers, and unwavering support.

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