Clothesline With Rain Sensors

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The objective of the research was to design an automated mechanical clothesline system equipped with a rain sensor. This development provided an efficient solution for people who dry their clothes outdoors and face weather challenges, specifically sudden precipitation. The structural model design required a 6.1 metre metal tube, segmented into three parts: the extension arm (1.8 metre), the support base (1.5 metre), and the stabilizing support (0.9 metre). The rotation mechanism was achieved through the integration of two bowling boxes, which also contributed to speed reduction. Additionally, a rolling door motor was installed, with a transmission attached to optimize operational speed. An Arduino microcontroller was incorporated along with a rain sensor, responsible for sending a signal to the motor to activate the movement of the clothesline arm. As safety measures, areas with voltage were labeled, and PVC protective boxes were built to safeguard the electronic components. This project had an approximate cost of $500, and the clothesline system had a load capacity of 18 kg. The system’s effectiveness was validated by considering that the rain sensor activation time was 6 seconds, both with a single drop and light drizzles. Among the advantages of the automated clothesline system were the ease of retrieving clothes during rain episodes, reduced energy consumption, decreased environmental pollution, and preservation of textiles compared to conventional dryers.

Awards Won: