A Robotic System for Temperature Scanning and Sanitizing

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Due to the Covid 19 pandemic and the rapid increase in cases schools, businesses and public buildings needed to introduce a system of screening and sanitizing pupils and visitors. Automated sanitizer machines are expensive with prices ranging from R 3 000 to R7 000 (US$200-470.) The manual process of screening is inefficient and ineffective. Multiple personnel are required to man the screening station to record visitor details, sanitize and scan their temperature. This causes a decline in work productivity and employees working time to scan customers. The research conducted was aimed at investigating the possible methods of maximizing the efficiency of the screening process by creating a mechanical means (robot) capable of executing the entire process. An EV3 Lego Mindstorms® Kit was used to construct and modify a robot. A standard rig was built and modified to include a cage to secure and hold a sanitizer container with an arm to spray the sanitizer. An Ultra-sonic sensor was utilized in measuring and comparing the distance to automate the sanitizer dispensing. A temperature sensor was utilized to scan the temperature of those sanitizing their hands. A program code was written to enable the rig to move the arm and dispense sanitizer when a hand came within twelve centimeters of the ultrasonic sensor. The design was tested with various sized bottles and different tension of nozzles.

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