UNIVERSITI TEKNOLOGI MARA

DESIGN AND DEVELOPMENT OF AN ARDUINO-BASED MEDICAL ASSISTANT ROBOT: A SMART ROBOT SOLUTION FOR PATIENT-CARE

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ABSTRACT

In the context of contemporary healthcare challenges, encompassing staff shortages, high labor costs, and infection risks, this study proposes a transformative solution through the integration of assistant robots in hospitals. These robots are designed to undertake routine tasks, optimizing operational efficiency and relieving healthcare professionals. Recognized issues include the scarcity of healthcare staff and the difficulty in providing timely care during peak hours. The study's objectives are twofold: to design an assistant robot supporting healthcare professionals and to fabricate an economically viable medical assistant robot. Methodologically, insights were gathered through a questionnaire, and design phases incorporated tools like the House of Quality, Pugh Table, Morphological Table, and Failure Modes and Effect Analysis. The results highlight the successful and accurate dispensing of pills by the robot at predetermined scheduled times. Notably, the robot's pill dispensing schedule is customizable, offering flexibility to cater to individual user needs. In conclusion, the prototype demonstrates reliability, safety, and cost-effectiveness. Future enhancements, including the incorporation of voice recognition for improved user interaction, position the robot as a substantial contribution to the evolving landscape of medical robotics.

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