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Intelligent Medicine Delivery Robot Trolley for Hospital Admitted Patients

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Abstract - The goal of the research is to enhance hospital patient care through the creation and application of an Intelligent Medicine Delivery Robot Trolley (IMDRT). In order to improve patient happiness, minimise mistakes, and expedite medicine delivery, the IMDRT makes use of cutting-edge technology including robots and artificial intelligence. The research combines human-computer interaction, robotics, and healthcare administration. Initial assessments indicate good feedback, shorter delivery times, and increased accuracy in the administration of medications.

***Key Words*:** healthcare, Medicine Delivery, robots and artificial intelligence

1.INTRODUCTION

A novel approach to enhance medicine delivery in hospitals is the Intelligent Medicine Delivery Robot Trolley. This creative system improves patient care by fusing IoT, robots, and artificial intelligence. Accurate and timely delivery of medication is essential, and hospitals play a vital role in delivering essential medical care and treatment. But obstacles including hospital settings, accurate drug administration, and human error can make this procedure difficult. In addition to providing a sophisticated navigation system, medication verification procedures, patient contact interfaces, real-time monitoring capabilities, and connectivity with EHR, The Trolley provides a solution by connecting with EHR. The ultimate goal of this research effort is to improve patient care by increasing healthcare safety and efficiency. The project's anticipated advantages, practical execution, technological stack, and conceptual design will all help continuing discussion about how intelligent technology may improve healthcare and provide a better future for both patients and healthcare workers.

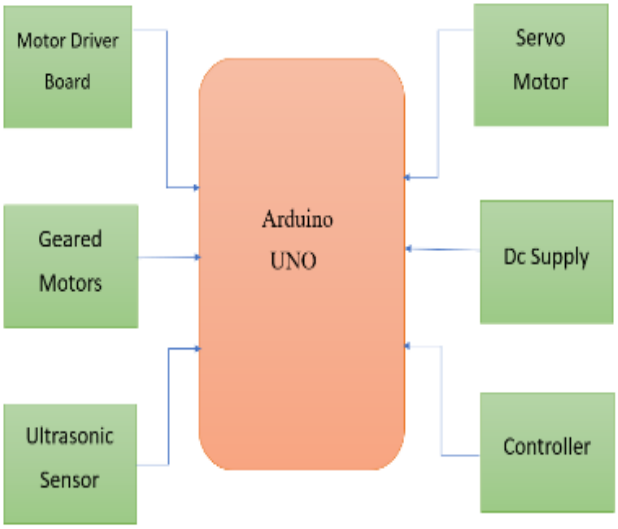
2.LITERATURE SURVEY

Title	Author	Year	Review
Integration of Cutting-Edge Technology	Tahereh Mahmoudi[1] and Alireza Mehdizadeh[2*]	2022	emphasized the role of artificial intelligence in medicine
Artificial Intelligence in Health Care: A Report From the National Academy of Medicine..	Michael E. Matheny, MD, MS, MPH[1,2]; Danielle Whicher, PhD, MHS[3]; Sonoo Thadaney Israni, MBA[4]	2019	recognizing its potential to transform various aspects of patient care and clinical decision-making.
Flexible Noncontact Sensing for Human–Machine Interaction	Lijun Lu, Chunpeng Jiang, Guosheng Hu, Jingquan Liu, Bin Yang	2021	introduced flexible noncontact sensing for human-machine interaction, which is particularl

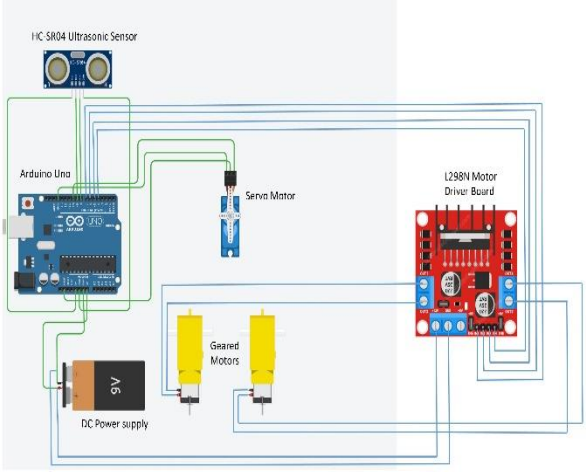
			y relevant for the design and functionality of the IMDRT
International journal for quality in health care : journal of the International Society for Quality in Health care	Karen Luxford[1], Dana Gelb Safran, Tom Delbanco	2011	conducted a qualitative study to identify facilitators for improving the patient experience.
Implementing HER-based screening and Referral syatem	Pablo Buitron de la Vega[1,2], Stephanie Losi[2], Linda Sprague Martinez[3], Allison Bovell-Ammon[2], Arvin Garg[1], Thea James[1,2], Alana M Ewen[2], Marna Stack[2], Heloisa DeCarvalho[1], Megan Sandel[1,2], Rebecca G Mishuris[1,2], Stella Deych[2], Patrick Pelletier[2], Nancy R Kressin[1,4]	2019	positive effects of patient-centered care-related health IT interventions on various health care process outcomes, patient-clinician communication, and access to medical information

3. BLOCK DIAGRAM

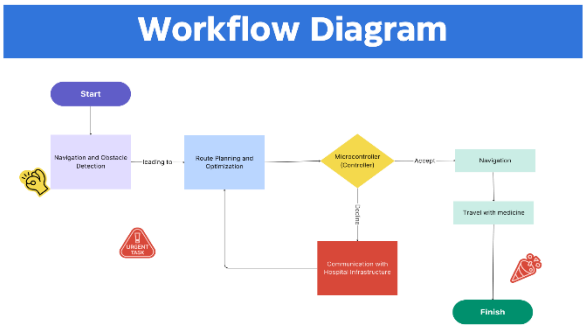
Arduino Microcontroller: The central control unit responsible for processing data, executing logic, and coordinating the operation of various components.
Motor Driver Board: This board interfaces between the Arduino and the geared motors, controlling their speed and direction.
Geared Motors: Two geared motors (left and right) are used for driving the robot trolley. They are controlled by the motor driver board and provide the necessary propulsion for movement.
Servo Motor: The servo motor is used for precise control of certain mechanisms such as the robotic arm or any other moving parts required for medication delivery.
Ultrasonic Sensor: Used for obstacle detection and navigation. It sends out ultrasonic waves and measures the time taken for them to bounce back. This data helps the robot to detect obstacles in its path.



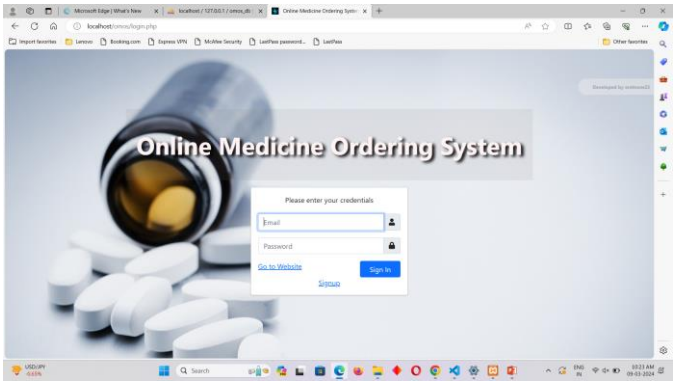
4. CIRCUIT DIAGRAM



5. WORKING FLOW



6. SOFTWARE OUTPUT



7.CONCLUSION

Intelligent Medicine Delivery Robot Trolleys leverage robotics, AI, and IoT to revolutionize hospital medication delivery. They reduce human contact, enhance infection control, optimize workforce allocation, and improve patient experience. Affordable technologies make them cost-effective, bridging the gap between providers and patients. Integration with health records supports data-driven decisions, aligning with evolving patient-centric healthcare trends. These trolleys empower patients, making them a compelling addition to modern healthcare

8. REFERENCES

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