

Design of a Bluetooth Controlled Food Delivery Waiter Robot for Restaurants

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Abstract

This Bluetooth Controlled Food Delivery Waiter Robot can be used in restaurants to deliver the foods that are ordered by the customers. It can also carry dirty dishes, in which the food was served and carried back to the kitchen. This robot can reduce human dependency and the workload in restaurant dinings. This robot is a Short-range Wireless Communication Technology based human controlled machine. It indentures depending on Ultra High Frequency (UHF) radio waves (2.402 GHz to 2.48 GHz). In this trial, the Bluetooth Controlled Food Delivery Waiter Robot's Software Orientation is oriented with an Android Operating System (OS) platform with the hardware orientation of motors. This machine starts moving after a signal request is taken from the Bluetooth Android Programmed Interface (API). This distinct function is composed with Arduino UNO R3 Microcontroller, Direct Current (DC) Motors, L293D Motor Driving Shield and HC-06 Bluetooth Module. When a customer places the order, an employee (controller) will drive the robot with food to the customer's table or after finishing the meal, the machine will take back the dirty dishes from the table to the dishwashing corner in the kitchen. Throughout this experiment, the design of hardware and software orientation has been narrated explicitly. This idea can also be used for carrying and delivering such heavy loads easily without human turbidity.

Keywords

Construction, Autonomous, Detection and Robot.

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Biographies

Jowad Md Madha (Affiliate Engineer, IMechE) is currently pursuing Bachelor of Science (BSc) degree in Mechatronics Engineering from Faculty of Science and Engineering, World University of Bangladesh. He is acting as the President of Industrial Engineering and Operations Management (IEOM) Society World University of Bangladesh Chapter from January 2021 to now and Vice President of Mechatronics Club, World University of Bangladesh from January 2022 to now. He also served as the Head of Executives in Mechatronics Club from May 2020 to December 2021. He also completed an attachment training under Automobile Engineering Course (Credit Course) as a Service and Maintenance Engineer in Mahindra & Mahindra Limited, in Ranks Motor Workshop Limited, Rangs Group from March 2022 to June 2022. He was also an Affiliate Ambassador of Bohubrihi Technologies Limited from November 2021 to April 2022 and a Campus Ambassador of Bunon - Mirror of Bangladeshi Textile and RMG Sector from June 2020 to May 2021. He also completed a virtual remote internship in Microsoft Corporation, InsideSherpa Virtual Program of Marketing during COVID-19 Pandemic. He completed Workshops in 2019 on Robotics & IoT from Japan-Bangladesh RATR Center, Ground Station Making of Satellites from NASA Solve Bangladesh. He was a Joint Champion of Green Technology and Innovation Contest 2019 by IEOM Society World University of Bangladesh. He was the Runner-up of 9th National Astro Olympiad 2014. He completed 5 technical projects and published 1 Bluetooth control Android Mobile Application named BluJo in Amazon App Store in 2019.

Anika Nawar is an undergrad student currently studying BSc in Mechatronics Engineering from Faculty of Science and Engineering, World University of Bangladesh. She is an affiliated engineer of Institutions Mechanical Engineers and acting as Secretary in Industrial Engineering and Operation Management Society World University of Bangladesh Student Chapter since June 2021. Before that she also served as a Director of Media in the same chapter (January 2021-May 2021). In 2019 she participated in a competition organised by IEOM Bangladesh and co-organised by World University of Bangladesh and was a joint champion. She has done an industrial attachment under Automobile Engineering Course (credit course) as a Service and Maintenance Engineer trainee in Mahindra

and Mahindra Ltd, Ranks Workshop Ltd, Rangs Group. She has completed workshops organised by Japan Bangladesh Robotic Society and NASA Solve Bangladesh. Currently she's performing the role of president in Mechatronics Club World University of Bangladesh (January 2022-present) before that she was also an executive board member of the same club (January 2021-December 2021).

Md Mahmudul Hasan is currently pursuing Bachelor of Science (BSc) degree in Mechatronics Engineering from Faculty of Science and Engineering, World University of Bangladesh. He is Acting as the Director of Membership of Industrial Engineering and Operations Management (IEOM) Society World University Of Bangladesh Chapter from January 2021 to now and Treasurer of Mechatronics Club, World University Of Bangladesh from January 2022 to now. He also completed an attachment training under Automobile Engineering Course (Credit Course) as a Service and Maintenance Engineer in Mahindra & Mahindra Limited, in Ranks Motors Workshop Limited, Rangs Group from March 2022 to June 2022. He also was a Head of Team Management in Hult Prize at World University of Bangladesh from January 2022 to June 2022.

Prof. Dr. Md. Mizanur Rahman is a Professor and Head of the Mechatronics Engineering Department, Faculty of Engineering at the World University of Bangladesh. He has research and teaching interest in both fundamental and applied aspects of Energy Technologies, especially in new technology to harvest electricity from solar power and hydropower. He began his carrier at the RETs in Asia Phase - II Project in 1999 as a Research Engineering under the Department of Mechanical Engineering at Khulna University of Engineering and Technology (KUET) and Asian Institute of Technology (AIT) Bangkok, Thailand, before joining Program Support Specialist in 2005 at BRAC. Dr. Rahman was appointed as an Assistant Manager Technical in 2006 at Rural Power Company Ltd and a Lecturer in 2009 at TAS Institute of Oil and Gas. Later on, Dr. Rahman moved to Universiti Malaysia Sabah as Senior Lecturer in 2012. In January 2019, I joined as an Associate Professor in the Mechatronics Engineering Department at the World University of Bangladesh and was Promoted as Professor in March 2021. He is a Chartered Energy Engineer and CEng Member of the Institution of Mechanical Engineers (IMechE) and Energy Institute (EI), a Fellow, Institute of Engineers Bangladesh (IEB), Member, Bangladesh Society of Mechanical Engineers (BSME), American Society of Mechanical Engineering (ASME) and Professional Member, Institute of Materials Malaysia (IMM) and Society of Industrial Engineering and Operation Management (IEOM).