

# Autonomous E-Commerce Contactless Delivery Robot

Sakshi Lende<sup>1</sup>, Resham Sonkusare<sup>2</sup>, Pranali Bhende<sup>3</sup>, Shivani Girhepunje<sup>4</sup>, Prof. N.K. Warambhe<sup>5</sup>

UG Students, Department of Electronics and Telecommunication<sup>1,2,3,4</sup>  
Assistant Professor, Department of Electronics and Telecommunication<sup>5</sup>  
Priyadarshini J. L. College of Engineering Nagpur, Maharashtra, India

**Abstract:** *As the world moves towards new trends and technology, there is a desire to create something more appealing and beneficial for residents. This study focuses on a relatively new area of application and gives a complete review of robotics applications in the food and lodging industries. All occupations in this new technological age rely on a technique known as automation. Instead of human employees, fresh research works are being generated in the market as the trend and new interest nowadays. In this framework, we explore the notion of Food Serving Robots (FSR) or other hotel-related items. It was built using Arduino boards and the Arduino IDE. The board is predefined in this project work by employing an ultrasonic sensor, a camera, and a microcontroller.*

**Keywords:** Food serving robots (FSR), Automation, IR obstacle sensor, Internet of Things mechanisms (IoT).

## REFERENCES

- [1]. Pei, Fujun, Mei Wu, and Simin Zhang. 'Distributed SLAM Using Improved Particle Filter for Mobile Robot Localization'. The Scientific World Journal 2014 (2014): 1- 10.
- [2]. Huang et al. Design of an Automatic Contactless E-commerce Delivery Robot based on Internet of Things (IoT)
- [3]. Zhang et al "Smart Delivery Robots for Last-Mile Logistics: A Comprehensive Review"
- [4]. Park et al "Design of a Contactless Delivery System using a Robotic Arm for E-commerce"
- [5]. Wang et al "Design and Implementation of a Contactless E-commerce Delivery System based on the Robot Operating System"
- [6]. Hu et al "An Automatic Delivery Robot for Smart E-commerce Logistics"
- [7]. N. Fathima, A. Ahammed, R. Banu, B.D. Paramesh Chari, and N.M. Naik, N.M., "Optimized neighbour discovery in Internet of Things (IoT)," In Proc. of International Conference on Electrical, Electronics, Communication, Computer, and Optimization Techniques (ICEECCOT), pp. 1-5, 2017.
- [8]. M. Asif, M. Sabeel, Mujeeb-ur-Rahman, Z. H. Khan "Waiter Robot – Solution to Restaurant Automation 2015
- [9]. Hertzberg, J.; Zhang, J.; Zhang, L.; Rockel, S.; Neumann, B.; Lehmann, J.; Dubba, K.S.; Cohn, A.G.; Saffiotti, A.; Pecora, F.; et al. The RACE project. KI Künstliche Intell. 2014, 28, 297–304.
- [10]. Hernandez-Vicen, J.; Martinez, S.; Garcia-Haro, J.M.; Balaguer, C. Correction of Visual Perception Based on Neuro-Fuzzy Learning for the Humanoid Robot TEO. Sensors 2018, 18, 972.
- [11]. Moley Robotics. MK1—TheWorld’s First Robotics Kitchen. 2015. (accessed on 10 December 2020).
- [12]. Puerto, K. Un Equipo de Robots Camarero del MIT Sirve la Cerveza de Forma Efficient. Xataka 2015. (Accessed on 10
- [13]. Wilson, Allan. 'Hajime Robot Restaurant, Bangkok, Japanese Yakiniku Barbecue'. N.p., 2015. 3 Sept. 2015.
- [14]. Welcome to Infinium Robotics,. 'Intelligent Robotics Solutions - Infinium Robotics'. N.p., 2015. <http://www.infiniumrobotics.com/>. 3 Sept. 2015.
- [15]. Tech in Asia, 'Singapore Restaurant Shows Off Autonomous Drone Waiters'.N.p., 2015. <https://www.techinasia.com/singaporerestaurant-autonomous-drone-waiters/>. 3 Sept. 2015.

- [16]. Park, Jae-Han, Seung-Ho Baeg, and Moon-Hong Baeg. ' An Intelligent Navigation Method for Service Robots In A Smart Environment'. International Conference on Control, Automation and Systems 2007 (2007)
- [17]. Lin, L. and Shih, H. (2013). Modelling and Adaptive Control of an Omni-Mecanum-Wheeled Robot. ICA, 04(02), pp.166- 179.
- [18]. McInerney, I. (2015). Simplistic Control of Mecanum Drive. FRC Team 2022, pp.1 – 4
- [19]. Kuo, Bor-Woei et al. 'A Light-And-Fast SLAM Algorithm for Robots In Indoor Environments Using Line Segment Map'. Journal of Robotics 2011 (2011): 1-12.
- [20]. Kagan, E., Shvalb, N. & Ben-Gal, I., 2019. Early History of Robots. In: Autonomous Mobile Robots and Multi-Robot Systems. s.l.:John Wiley & Sons, Inc.,
- [21]. M. Abdullah-Al-Kaiser, D. J. Paul, A. I. Khan, C. Shahnaz and S. A. Fattah, “A cost effective GPS guided autonomous object transporter robot for disaster management and industrial automation,” TENCON 2017 - 2017 IEEE Region 10 Conference, Penang, 2017, pp. 2637-2641, doi: 10.1109/TENCON.2017.8228307.
- [22]. Starship Self-driving Delivery Robot. [Online]. Available: <https://www.starship.xyz/business>
- [23]. M. H. A. Hamid, A. H. Adom, N. A. Rahim and M. H. F. Rahiman, “Navigation of mobile robot using Global Positioning System (GPS) and obstacle avoidance system with commanded loop daisy chaining application method,” 2009 5th International Colloquium on Signal Processing & Its Applications, Kuala Lumpur, 2009, pp. 176-181, doi: 10.1109/CSPA.2009.5069211.
- [24]. L298N Motor Driver Module. [Online]. Available: <https://components101.com/modules/l293n-motor-driver-module>
- [25]. Garcia-Haro, J. M. (2018). Waiter Robot Application: Balance Control for Transporting Objects. International Conference on Intelligent Robots and Systems (IROS) .
- [26]. Sayali N Joshi<sup>1</sup>, V. K. (2019). Design and Development of Human Following Trolley. International Journal of Innovative Science and Research Technology ISSN No:-2456-2165 , Volume 4 (Issue 4).
- [27]. P., S. (2018). Food Delivery Automation in Restaurants Using Collaborative Robotics. International Conference on Inventive Research in Computing Applications (ICIRCA 2018) ,IEEE Xplore Compliant Part Number:CFP18N67-ART; ISBN:978-1-5386-2456-2.
- [28]. Sandeep Bhat, M. M. (2015). Embedded System based waiter and military robot path planning. International Conference on Control,Instrumentation, Communication and Computational Technologies (ICCICCT) .
- [29]. Md. Kamruzzaman, M. T. (2017). Design and implementation of a robotic technique based waiter. International Conference on Electrical Information and Communication Technology (EICT).
- [30]. Fatima R.Ali, A. R. (2018). Design and implementation of static and dynamic objects store systems using line follower robots . International Conference on Advances in Sustainable Engineering and Applications (ICASEA), Wasit University, Kut, Iraq .