

Robotic Oil Filter Removing Unit: Advancement in Autonomous Robot in Field of Automotive Maintenance

Nishit Wishwakarma, Harshal Chitte, Nikhil Suryawanshi, Shubham Sonawane

Department of Mechanical Engineering
Guru Gobind Singh Polytechnic, Nashik

Abstract: *The process of changing the oil filter under an automobile presents various challenges, especially on safety, efficiency, and the health of workers. Traditionally, this is done using heavy machinery like jacks to elevate the car, which poses a failure risk and possible accidents. Moreover, the working space beneath the car is usually congested and poorly lit, which may cause discomfort and safety risks to the technician, including possible suffocation due to poor ventilation. The physical demands while working in such conditions also have adverse effects on the hygiene and well-being of the worker. This paper presents the conceptualization of an autonomous robotic system aimed at mitigating these challenges. The robot will safely elevate the car, change the oil filter, and mitigate the risks associated with traditional manual methods, such as accidents, exposure to harmful fumes, and physical strain. The system integrates automation to enhance the safety of workers, improve operational efficiency, and ensure better hygienic conditions while performing automotive maintenance tasks*

Keywords: automobile