RFID Based Smart Vehicle Presidency

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Abstract: *This project focuses on road safety. In today's rapidly evolving transportation landscape, ensuring compliance with vehicle load limits, insurance requirements, and pending challans has become paramount for maintaining road safety and regulatory standards. To address this critical need, we present the "RFID Based Smart Vehicle Presidency" - an innovative solution leveraging Arduino microcontroller technology. This system incorporates advanced load sensors strategically positioned on roads to accurately calculate the weight of passing vehicles. When a vehicle exceeds its designated weight limit, an automatic GSM alert is promptly dispatched to the relevant authorities, facilitating timely intervention and ensuring adherence to road safety regulations. In addition to load monitoring, the system employs RFID receivers for comprehensive verification of each vehicle's compliance status. It seamlessly cross-references against databases to ascertain any pending challans or gaps in insurance coverage. This real-time verification process is seamlessly integrated into the vehicle's existing RFID card, streamlining record-keeping and ensuring instant access to critical compliance information. By integrating these components, our system offers a comprehensive and proactive approach to enhancing road safety and regulatory compliance. The seamless coordination between load sensors, Arduino microcontrollers, GSM technology, and RFID verification not only provides real-time insights but also enables efficient and accurate monitoring of vehicle compliance, significantly reducing the potential for accidents and regulatory violations. Through this project, we aim to contribute to a safer and more regulated transportation ecosystem, ultimately leading to reduced accidents, enhanced road safety, and improved overall traffic management.*

Keywords: RFID, Smart Vehicle Presidency, Arduino, Vehicle Weight Monitoring, Weight Limits

BIBLIOGRAPHY

[1]. Research Paper "Vehicle Overloading Detection and Protection using Raspberry Pi and IOT Application" by Mr. Shardul Singh Gurjar and Dr. Ravi Mishra

[2]. Research Paper "IOT Based Vehicle Load Balancing and Accident Detection" by Prof. TusharPhadtare Asst. Professor BSIOTR, Pune

[3]. Research Paper "An IOT Monitoring Design System of Road Overload Vehicles Based on Raspberry Pi" by Mortada Mohamed Abdulwahab, Gezira University, Sudan

[4]. Paper "Design and Development of Automatic Vehicle Overload Control System" by BhagwatDayal, Asst. Professor, College of Engineering, DebreBehran University, Ethopia, Africa

[5]. Paper "Avoid Overloading in Truck using IOT with Fuel Cutoff" by P. Leon Dharmaduarai Asst. Professor, SNS College of Technology, Coimbatore, Tamil Nadu

[6]. Paper "Design of Overloading Detection System on Vehicles Using Adruino" by M Z Rohim, E Wijayanti and A C Murti

[7]. Paper "Vehicle Overloading: A Review" by Ms. Rekha Rani, Asst. Professor, Women Institute of Technology, Dehradun, India

[8]. Arrive Alive, "Overloading and Road Safety," pp. 1–5, 2016, [Online]. Available: https://arrivealive.co.za/pages.aspx?u=Overloading-and-Road-Safety.

[9]. R. Shah, Y. Sharma, B. Mathew, V. Kateshiya, and J. Parmar, "Review Paper on Overloading Effect," Int. J. Adv. Sci. Res. Manag., vol. 1, no. 4, pp. 2–5, 2016, [Online]. Available: www.ijasrm.com.

[10]. T. B. JOEWONO and H. KUBOTA, "Safety and Security Improvement in Public Transportation Based on Public Perception in Developing Countries," IATSS Res., vol. 30, no. 1, pp. 86–100, 2006, doi: 10.1016/s0386-1112(14)60159-x.

[11]. K. Hassan, A. Sam, and D. Machuve, "OVERVIEW ON PASSENGERS OVERLOAD CONTROL IN PUBLIC BUSES CASE STUDY : TANZANIA," vol. 2, no. 8, pp. 2536– 2540, 2013.

[12]. S. Xu and Q. Zhao, "Study on vehicle-mounted overloading control system for passenger vehicles," Procedia Eng., vol. 15, pp. 1214–1218, 2011, doi: 10.1016/j.proeng.2011.08.224.

[13]. S. Hu, M. Kong, and C. She, "Design of vehicle overload detection system based on geophone," J. Phys. Conf. Ser., vol. 887, no. 1, 2017, doi: 10.1088/1742-6596/887/1/012021.