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E-Royalty Authority Platform and Overload Detection System

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Abstract- Our E-Royalty Authority Platform, along with an Overload Detection System, is set to transform how governments regulate mining and sand extraction. In this context, "royalty" means the government's permission for mining operations activities. This platform simplifies the granting of permits and keeps a watchful eye on resource usage. The role of transportation facilities is very important. The reason is that economic movement is not only centered on one particular area but also reaches out and involves other regions. Distribution of goods and services requires safe and convenient transportation and good road infrastructure. In practice, many heavy vehicles carry a very excessive transport load. This is due to the large distribution needs of goods to minimize operational costs. The negative impacts of overloading include the risk of accidents and road damage. This study aims to use a prototype method by utilizing the implementation of a load control system using a proximity sensor run by Arduino Uno. This concept utilizes proximity sensors to regulate transportation loads according to the standards of the Republic of Indonesia and monitor violations in real-time. The results of the study resulted in a prototype capable of detecting overload based on load height and suspension changes for loads

keywords:
E-Royalty, Analysis, Detection, Authority

1. Introduction

Before the development of the e-royalty authority platform and overload detection system, royalty authorities typically relied on traditional manual and semi-manual systems to manage and process royalty data. These traditional systems often involved a combination of manual data entry, spreadsheet-based tracking, and limited automation.

The E-Royalty Authority Platform and Overload Detection System aims to revolutionize the way royalties are managed and detected in the online marketplace. This platform provides a comprehensive solution for tracking and managing royalties in real-time, while also detecting potential overload scenarios that can lead to unauthorized usage and loss of revenue. The E-Royalty Authority Platform solves this problem by providing a centralized system that enables content creators and rights holders to register their works and monitor their royalty earnings. By integrating with various online marketplaces and platforms, this system ensures that every sale or usage of the registered content is tracked and accounted for, allowing for accurate royalty calculations and timely payment distribution. Moreover, the platform incorporates an overload detection system that constantly analyzes the usage patterns of registered content.

2. Literature Survey

2.1 IoT based Overload Detection System in Public Transportation Vehicles.

In India, due to the negligence of the legal systems, transporters loaded the goods vehicles with weights far above the permissible limit. Overloaded vehicles cause extensive road damage and enormous economic losses to society, seriously threatening road safety. Due to overloading, many people lose their lives in accidents, and vehicle fuel consumption increases, resulting in environmental pollution. To create a workable, effective system for the Regional Transport Office department and to generate, and manipulate fines. The proposed system has given the count of incoming and departing passengers which has become a feasible, efficient technique in any Regional Transport Office department.

2.2 Vehicle Overloading Alert using IoT.

Internet of Things (IoT) is a new technology which has made human life easier for automation. There is a use of various sensors inbuilt in the systems for various automation purpose. These sensors play a vital role in detecting and hence alarming us about a particular consequence. In the present era, it has been noticed that everyone is indulged in money making without thinking about consequences. In the Transportation Industry, this practice has taken the shape of overloading. Although there are many rules, its effective implementation requires an organized system. Keeping a view on the current scenario, this paper proposes a set of ideas and measures to be adopted that measures the overload and alert and if it is ignored the vehicle information is forwarded to check-posts so that any severe accidents can be prevented coming their way. The overloading is detected with the use of Wifi Weight sensors and the collected data is compared with the data in the database corresponding to the probable paths to alarm about the overloading and if it is ignored then it would notify the concerned authorities.

3. Project Concept:

The E-Royalty Authority Platform and Overload Detection System is to develop an online platform that acts as a centralized authority for royalty administration in various industries. This study aims to use a prototype method by utilizing the implementation of a load control system using a proximity sensor run by Arduino Uno. The platform will also incorporate an overload detection system to prevent unauthorized use of copyrighted materials. Users can register on the platform, create their profiles, and provide relevant information about their works. The platform will provide a robust system for managing royalties and ensuring that artists receive fair compensation for the use of their works. It will handle licensing, distribution, and collection of royalties from various sources such as streaming platforms, publishers, etc. The E-Royalty Authority Platform and Overload Detection System will provide a comprehensive solution for artists to manage their intellectual property rights, receive fair compensation for their works, and protect against unauthorized use. It will aim to create a transparent and efficient ecosystem that benefits users of their creations. This technology consists of a Ultrasonic sensor which is placed under the vehicle and permissible weight is being checked with the actual load and sends the output to the Arduino microcontroller, if the load is in given limit, then it gives input(power) to vehicle for ignition.

4. Proposed Working:

First, we have to calibrate this system for measuring the correct weight. When user will power it up then the system will automatically start calibrating and if the user wants to calibrate it manually then press the reset button. In this work, we have used Arduino to control the whole process. Ultrasonic sensor senses the weight. Admin can login and approve company & approve tab. Admin post property stock. Company can register and apply for royalty stock & View approved royalty. Can see user request for items and approve or disapprove this request. Users can register and login & then register for royalty. User search items and give location details. Arduino is an open-source framework used to develop projects in the field of electronics. Arduino consists of two sections, i.e.one is a circuit board (often called a microcontroller), which is programmable. The second is a software piece, or IDE running on our device, which is used to write and upload the code to the physical board. The platform of Arduino has become very good with people who start with electronics.

5. Comparison Of Processing Time between Manual and E-Royalty System

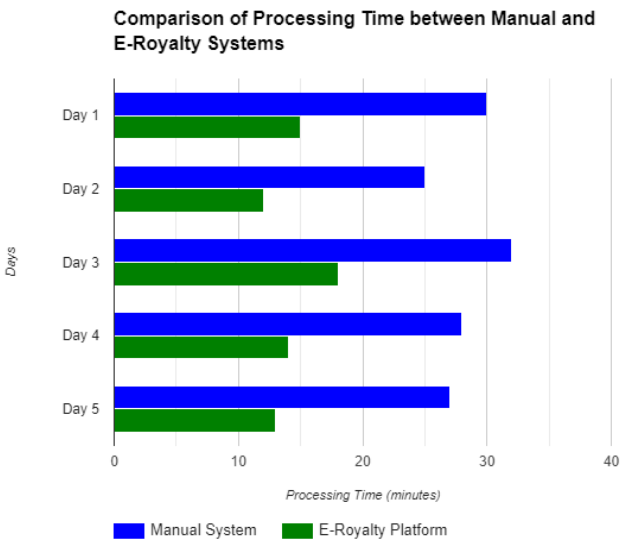
5.1 Processing Time

Table 1:Processing Time

Days	Manual Processing Time (minutes)	E-Royalty Platform Time (minutes)
Day 1	30	15
Day 2	25	12
Day 3	32	18
Day 4	28	14
Day 5	27	13

5.2 Graph

Graph 1: Processing Time



5.3 Manual System:

1. User submits paper application to company.
2. Company verifies application and calculates royalty.
3. Company issues paper invoice to user.
4. User pays invoice manually.
5. Company records payment and updates records.

5.4 E-royalty Platform:

1. User submits digital application through platform.
2. Platform verifies application and sends to company.
3. Company reviews application and approves/rejects.
4. If approved, platform calculates royalty and sends invoice to user.
5. User pays invoice electronically through platform.
6. Platform records payment, updates records, and notifies company.

5.5 Components used:

Table 2: Components

Component	Description
Arduino Uno	Microcontroller board for electronics projects. Connects to various sensors and actuators. Runs user-written code for control and interaction.
GPS Module	Sensor that determines location using satellite signals. Communicates with Arduino through serial communication.
LCD (Liquid Crystal Display)	Small display screen used to show text and simple visuals. Controlled by Arduino code to display information.
Ultrasonic Sensor	Sensor that measures distance to an object using high-frequency sound waves. Sends and receives sound waves to calculate distance.

6. Design Concept and Block Diagram:

1. Block Diagram:

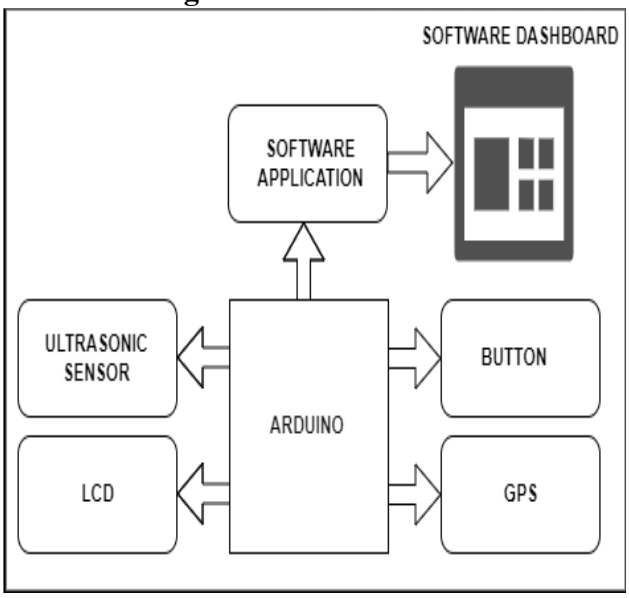


Fig:-1.Block Diagram

2. System Architecture:

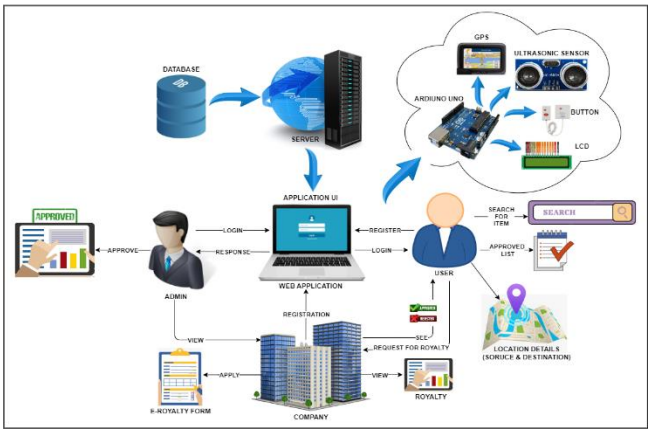


Fig: -2. System Architecture

In This System there are logins for Government, Company, User.

The role of user is to Register and place order and user can also track their order.

Role of the Company is applying for royalty through web-application to government and company is also responsible for fulfilling customer order requirements.

And the role of Government is to approve the royalty. And all of this data is stored in database.

The GPS Sensor is used for Tracking location, Ultrasonic sensor is used for calculating weight the button is used for turning off on hardware part.

7. Result:

7.1 Web Application:

Image:1 Admin/Government

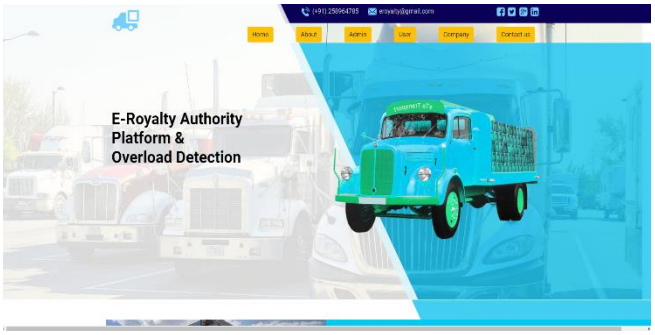


Image:2 Admin/Government

1. **Government Role**:
1. Grants permission (royalty) for sand and stone extraction to companies.
2. Monitors and regulates the extraction activities to ensure compliance with environmental and legal standards.
3. Provides oversight and approval for the implementation of the Overload Detection System.

Image:3 Company

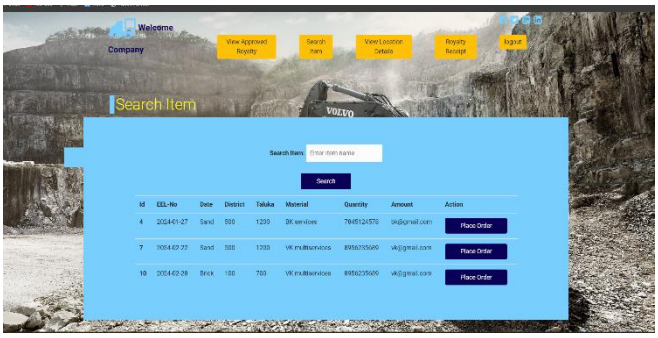
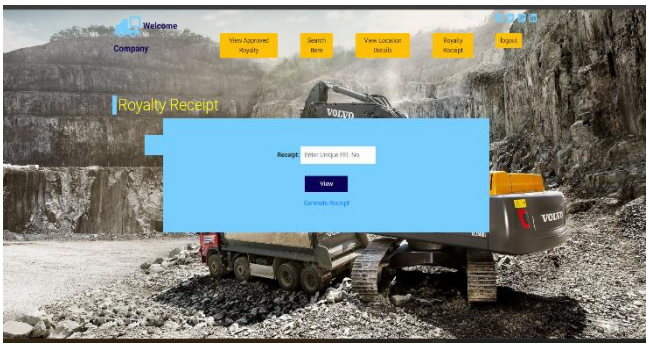


Image:4 Company



2. **Company Role**:
1. Applies for royalty permits from the government to conduct sand and stone extraction activities.
2. Implements the Overload Detection System as mandated by the government.
3. Utilizes vehicles equipped with ultrasonic sensors to monitor and prevent overloading during transportation of extracted materials.
4. Receives and interprets data from the sensors, which is then displayed on LCD screens within the vehicles to indicate the levels of sand (full, mid, empty).
5. Ensures that trucks are equipped with GPS tracking devices to monitor their movement from source to destination.
6. Submits reports and data to the government as required for regulatory compliance.

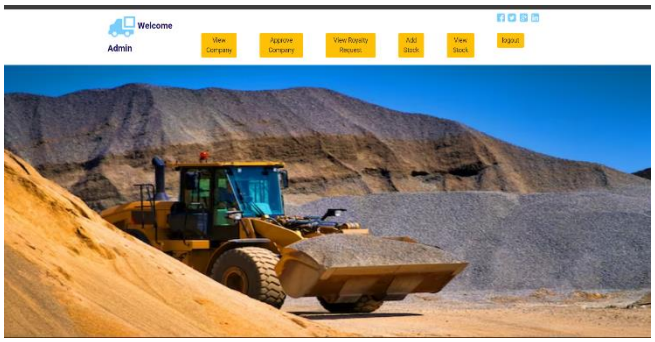


Image:5 User

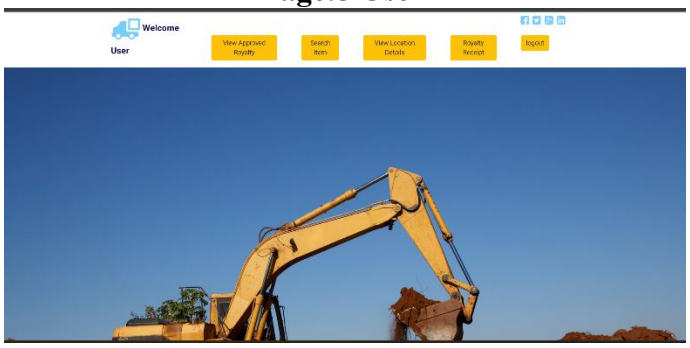


Image:6 User

3. User Role:

1. Users, likely employees of the company, interact with the E-Royalty platform to initiate and manage royalty applications.
2. They may also have access to the LCD screens within the vehicles to monitor sand levels during transportation.
3. Additionally, users may utilize the GPS tracking feature to track the location of company trucks and ensure efficient logistics management.

7.2 Overload Detection System

Image:7 Hardware Model

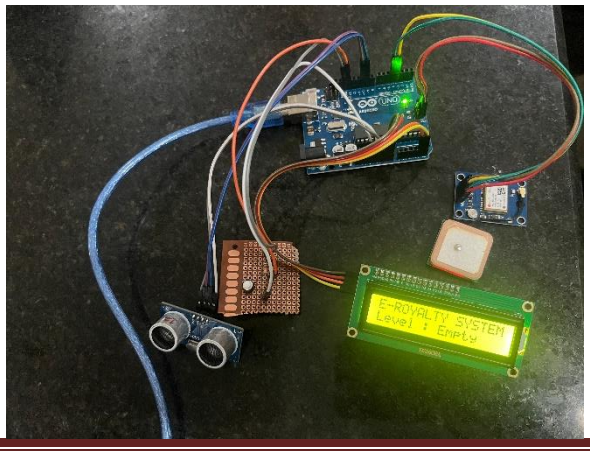
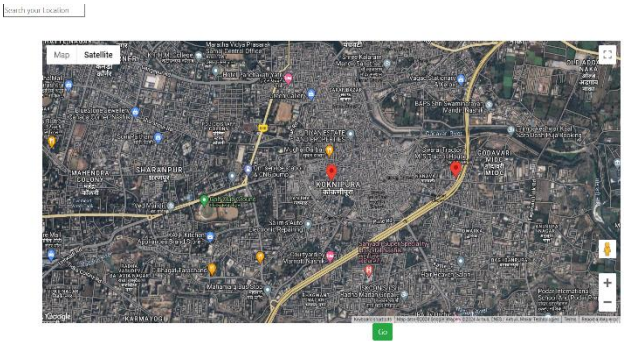


Image:8 LCD screens



1. Overload Detection:

Overload detection is the process of identifying and preventing excessive loading of materials, such as sand or stone, onto vehicles during transportation. In the context of the E-Royalty platform, overload detection is implemented using ultrasonic sensors installed on trucks. These sensors measure the volume or weight of the material being loaded onto the truck and provide real-time data. If the sensor detects that the load exceeds the permitted limit, it triggers an alert to notify the driver or relevant authorities. This helps prevent safety hazards, damage to vehicles, and ensures compliance with regulations governing load limits for transportation.

8. Conclusion

The E-Royalty Authority Platform presents a transformative solution for the governance of sand and stone extraction, addressing key challenges faced by both government regulatory bodies and mining companies. By streamlining permit and royalty management processes, enhancing monitoring capabilities, and promoting collaboration between stakeholders, the platform

offers significant benefits for sustainable resource management and regulatory compliance.

Through the platform, government regulatory bodies can efficiently manage permit applications, ensure adherence to environmental and safety standards, and monitor extraction activities in real-time. Mining companies benefit from streamlined processes, improved transparency, and enhanced compliance with regulatory requirements. The integration of advanced technologies, such as the Overload Detection System, further enhances safety measures and environmental protection efforts.

9. References

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