E-Royalty Authority Platform and Overload Detection System

Sahil P. Bhandare[1] Sanket K. Boraste[2] Chetan S. Gangurde[3] Sahil H. Pardeshi[4] Ajit P. Patil[5]
[1,2,3,4,5]Department of Information Technology
[1,2,3,4,5]MVP'S RSM Polytechnic, KBT Circle, Gangapur Road, Nashik, India

Abstract — The e-royalty authority platform is a digital solution designed to address the complexities associated with managing substantial amounts of royalty data. By automating the collection of data from diverse sources such as streaming platforms and online stores, the platform ensures precision and effectiveness. A pivotal aspect of its functionality lies in its overload detection system, which constantly monitors the workload of the infrastructure, promptly alerting administrators to potential issues. This platform simplifies the management and monitoring of royalty payments, providing comprehensive reporting and analytical tools to facilitate informed decision-making. In summary, it presents a contemporary and efficient approach to managing royalty data, thereby saving time and alleviating administrative burdens.

Keywords: E-Royalty, Analysis, Detection, Authority. Tracking, microcontrollers, Internet of Things (IOT), Sensors

I. INTRODUCTION

The E-Royalty Authority Platform and Overload Detection System innovates online royalty management by providing a centralized solution for tracking and managing royalties in real-time, addressing challenges brought about by the growth of digital content. Content creators can register their works on the platform, ensuring precise royalty calculations and prompt payments through integration with various online marketplaces. An overload detection system monitors content usage, alerting authorities to potential infringement or unauthorized distribution, thus preventing revenue loss. Key features include real-time royalty monitoring, seamless integration with online platforms, automated royalty calculations, and advanced overload detection. Ultimately, the system aims to maximize revenue for content creators and enhance the financial landscape of the digital content industry.

II. LITERATURE SURVEY

Kattimani et al. conducted research focused on enhancing the practicality of a vehicle load control framework by integrating load cell strain gauges into the vehicle. Data collected from sensors is processed by a single-chip microcontroller to calculate the overall vehicle load. If an overload is detected, the microcontroller provides commands to prevent the vehicle's frame system from starting [1].

Jai Ganesh proposed a system that utilizes dynamic methods for estimating truckload weight based on suspension compression. Ultrasonic sensors attached to the truck's base measure the compression caused by load weight, allowing for dynamic load weight estimation [2].

Yanling Liu et al. utilized vibration sensors to detect overload. Vibration data is collected and processed using Raspberry Pi as the central data gathering component. A signal conditioning circuit board filters and amplifies vibration signals, converting analog signals to digital. Embedded nodes organize the data and determine the vehicle's status [3].

H. D. Kattimani et al. explored the feasibility of a vehicle load control system employing strain gauge load cells. A single-chip microcontroller receives data from weight sensors to compute the total vehicle load. If overweight, the microcontroller sends instructions to prevent the vehicle system from starting [4].

A et al. proposed a system based on spring compression to detect overload. When the load exceeds its limit, the spring compresses, causing contact between smaller springs within the system. This results in a short circuit, triggering overload detection [5].

Renju K et al. suggested using a video surveillance system mounted at signals to automatically capture overload vehicle information for processing on a server. Various methods are employed for detecting overload vehicles, including axle load information, passenger counting, and Weigh in Motion (WIM) sensors [6].

Jimin Yuan et al. developed a system utilizing GPS satellite positioning to obtain vehicle coordinates. A CDMA wireless communication network transmits vehicle data to a monitoring center in real-time, enabling traffic management and dispatching. This system leverages common editing tools and existing GIS functionality for enhanced application development [7].

III. PROJECT CONCEPT

A. E-Royalty Platform

The e-royalty platform provides a centralized and efficient management system for handling royalty payments and authorizations, benefiting both content creators and authorities by saving time and resources. It ensures transparency through clear records, reducing disputes and building trust. Additionally, by automating authorization and payment tasks, the platform simplifies the process and allows creators to concentrate on their creative endeavors.

B. Hardware Requirements

1) Arduino:

The Arduino UNO, driven by the ATmega328P, includes 14 digital I/O pins, 6 PWM outputs, and 6 analog inputs. It utilizes a 16MHz quartz crystal and is capable of being powered through USB or an external source (6-20V). PWM functionality is accessible on pins 3, 5, 6, 9, 10, and 11. External power can be supplied via an AC adapter or battery, connected through the power jack or pin headers.

Fig. 1: Arduino

2) GPS Sensor:

The Global Positioning System (GPS) consists of 24 satellites distributed across 6 orbital planes, facilitating navigation on Earth and in space. These satellites broadcast their position and time data, enabling GPS receivers to determine accurate location, velocity, and time for a wide range of applications such as navigation and geodesy.

Fig. 2: GPS Sensor

3) Button:

To activate the buzzer, simply press the button.

4) LCD:

Liquid-crystal displays (LCDs) use liquid crystals to adjust light, generating images in color or monochrome. They're versatile, displaying both arbitrary and fixed images, and find applications in computers, digital clocks, monitors, televisions, and signage.

Fig. 3: LCD

5) Ultrasonic Sensor:

Ultrasonic sensors gauge target distance through emitting and receiving ultrasonic waves, which are then converted into electrical signals. They comprise a transmitter for emitting sound and a receiver for capturing reflected sound.

Fig. 4: Ultrasonic Sensor

IV. System Architecture

The system architecture is composed of three primary components: Admin, Company, and User, each serving distinct roles within the platform. The admin component oversees administrative tasks like login authentication, company approval, and property stock management. Admins possess the authority to approve or reject requests related to royalty stock from both companies and users. The Company component is responsible for company-specific functionalities, including registration with unique identifiers, applying for royalty stock, viewing approved royalty, and handling user requests for items. Additionally, companies can post property stock with detailed city and area specifications. The User component caters to end-users who can register, log in, and apply for royalty from registered companies. Users gain access to an approved list of royalty stock, search for items, view location details, and generate royalty receipts. Hardware integration incorporates ultrasonic sensors, LCD displays, GPS sensors, buttons, and Arduino microcontrollers to facilitate functionalities such as distance measurement, information display, location tracking, user inputs, and system interfacing. This comprehensive architecture ensures smooth operation of the platform, supporting administrative tasks, company management, and user interactions while leveraging hardware components for enhanced functionality.

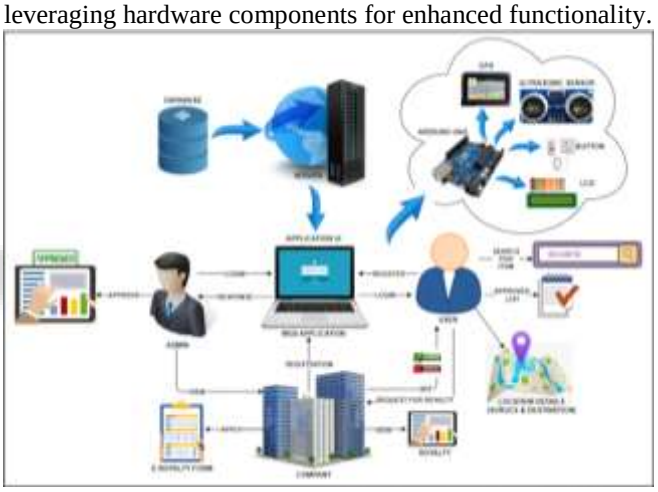

Fig. 5: Architecture

V. Conclusion

The E-Royalty Authority Platform and Overload Detection System offer a robust solution to the complexities of royalty management in the online realm. By efficiently tracking and managing royalties while also detecting overload situations, this platform provides content creators and rights holders with the means to safeguard their intellectual property and optimize revenue streams. These tools are instrumental in addressing the challenges inherent in royalty management and system stability within the digital industry. Not only do they ensure accurate and timely payments for content creators, but they also contribute to the overall operational integrity and user experience of digital platforms.

Future scope: The E-Royalty Authority Platform can utilize advanced data analytics and machine learning techniques to enhance royalty tracking accuracy. Incorporating blockchain technology adds transparency and security to royalty transactions. Improving the overload

detection system with IoT sensors enables real-time monitoring and prevention of overloading. Future developments aim to integrate emerging technologies for efficient royalty management and power load control, ensuring continual evolution to meet industry demands.

REFERENCES

[1] Kattimani,H.D., Meghana,N.R., Nagashree,B., Munegowda,S., & Vijayalakshmi,S.(2017)." Vehicular Load Discovery and Protection." International Journal of rearmost exploration in Engineering and Technology (IJLRET), 119 – 122.
[2] S.J.G. and Vignesh,M.(2019)." Truck importing Grounded on the suspense of the Vehicle an Optimized system for Dynamic dimension of Truck Loading Capacity." Presented at the International Conference on Intelligent Transportation Engineering (ICITE), Volume 3, September 2018.
[3] "An Optimized system for Dynamic dimension of Truck Loading Capacity." Presented at the International Conference on Intelligent Transportation Engineering (ICITE), Volume 3, September 2018.
[4] Kattimani,H.D., Meghana,N.R., Nagashree,B., Sahana Munegowda, & Vijayalakshmi,S. (2017)." Vehicular Load Discovery and Protection." International Journal of rearmost exploration in Engineering and Technology (IJLRET), ISSN 2454- 5031, pp. 119- 122.
[5] Vinoth,A., Prabu,L., & Ragunath,K. (2016)." Design and Fabrication of Load Discovery System in motorcars." International Research Journal of Engineering and Technology (IRJET), e-ISSN 2395- 0056, Volume 03, Issue 11, November 2016.
[6] Zhou, Zhi- Feng, Cai, Ping, Chen, Ri- Xing, & Li, Zhi-Gang.(2006)." system of Processing Data of Weigh- in-stir of Vehicles Grounded on Nonlinear wind- Fitting." Journal of Shanghai Jiao Tong University, Volume 40, Issue 5, pp. 709- 712.
[7] Mohamed,R.K., Ahmad,S.A., Hideo,Y., Airul,S.A., & Rahizar,R.(2013)." Degree of Vehicle Overloading and its Recrimination on Road Safety in Developing Countries." IISTE (Civil and Environmental Research), Volume 3(12), pp. 20- 31.
[8] Mohamed Rehan Karim et.al. (2013)." Degree of Vehicle Overloading and its Recrimination on Road Safety in Developing Countries." Civil and Environmental exploration.

