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Smart Civic Issue Reporting System Using Convolutional Neural Networks and Duplicate Image Detection

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Abstract: Rapid urbanization has significantly increased the frequency of civic infrastructure problems such as potholes, garbage accumulation, water leakage, and malfunctioning streetlights, which directly impact the quality of urban life and public safety. Existing civic issue reporting mechanisms are largely manual, fragmented, and time-consuming, often resulting in delayed responses, lack of transparency, and multiple duplicate complaints for the same issue. This project presents a Smart Civic Issue Reporting System that leverages Convolutional Neural Networks (CNN) and Duplicate image identification techniques to automate and streamline the complaint management process. Citizens can report civic problems using a web or mobile application by uploading images along with GPS-based location details. The uploaded images undergo preprocessing and are analyzed using a CNN-based classification model to automatically identify the type of civic issue. To avoid redundant reporting, the system incorporates a duplicate image identification module that compares deep feature representations of newly submitted images with existing complaint records. All complaint information is stored in a centralized database and accessed through an administrative dashboard used by municipal authorities. This dashboard enables efficient monitoring, prioritization, and resolution of reported issues. A notification module provides real-time updates to citizens regarding the status of their complaints, ensuring transparency and user engagement. By reducing manual intervention, minimizing duplicate complaints, and accelerating response time, the proposed system enhances operational efficiency and accountability. Overall, the solution supports smart city development by applying artificial intelligence and data analytics to improve urban service delivery. The approach offers a scalable framework suitable for modern municipal governance systems.

Keywords: Convolutional Neural Networks, civic issue reporting, duplicate image detection, smart city, urban infrastructure, deep learning, Artificial Intelligence.

An Advanced Online Voting System Using Face Recognition Integrated with Blockchain and Cybersecurity

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Abstract: Traditional voting systems have problems such as identity fraud and duplicate voting. This paper describes a secure online voting system developed as a full-stack web application that combines biometric authentication and secure data management methods. The proposed system authenticates the identity of voters through live face recognition by matching the captured images with the pre-stored facial information to ensure that only legitimate voters can take part in the voting process. Facial feature extraction methods are employed for reliable identity verification, and secure authentication processes safeguard user accounts against any unauthorized access. Each vote is safely stored through cryptographic hashing methods to maintain data integrity and prevent any manipulation. A duplicate vote prevention system ensures that every authenticated voter can place only one vote. The system also provides constituency-based candidate selection, where voters can place votes only in their designated area. Simulation experiments conducted on the system demonstrate its authenticity and efficient vote management. The proposed system provides a secure, transparent, and convenient voting system that is appropriate for small-scale digital elections and can be improved for large-scale election systems.

Keywords: Secure Voting, Face Recognition, Blockchain, Cybersecurity, SHA-256, JWT, OCR, MediaPipe, Digital Democracy.