Abstract

CivicBrain+: AI-Powered Smart Municipality System for Grievance and Welfare Management

CivicBrain+ is a smart web-based platform designed to improve how municipalities handle public complaints and distribute welfare schemes. Built using the MERN stack, the system allows citizens to report issues like potholes, garbage, or water leaks with photos and location. At the same time, officers, councillors, and administrators use their dedicated dashboards to monitor, assign, and resolve these complaints efficiently. The platform also supports welfare scheme posting, where councillors or panchayat-level admins can offer resources like hens or sewing machines to eligible families. Citizens can apply for these benefits based on their family conditions and financial needs.

To make the system smarter and fairer, CivicBrain+ includes four machine learning modules. The first is an image classifier (CNN) that detects the issue type from complaint photos. Second, an NLP-based priority scorer evaluates the urgency of complaint text. Third, a welfare recommender (XGBoost) helps councillors identify the most deserving beneficiaries. And fourth, a time-series forecasting module (Prophet/ARIMA) predicts which wards will have more complaints in the coming weeks, helping admins plan resources and manpower better.

In the final semester extension, the project adds an IoT integration module for real-time issue detection. Devices like garbage level sensors or water leakage detectors can now automatically generate complaints when thresholds are crossed, without human input. This makes the system proactive and capable of responding to problems even before citizens report them. Overall, CivicBrain+ is a scalable, AI-powered, and IoT-ready solution that brings transparency, automation, and fairness to urban governance.