Slum Community-centric App and Government Portal for Grievance Management and Land Ownership Transparency

–Integrating Technology for Sustainable Urban Transformation

Project Statement

Slums, characterized by inadequate sanitation, water supply, housing, and living space, pose significant developmental challenges. Governments have attempted solutions like slum upgrading, involving improving infrastructure and legalizing land rights. Despite these efforts, poverty, lack of affordable urban land, and insufficient data contribute to the rise of slums. To create a healthy, inclusive, and prosperous country, technology can address data gaps, monitor and control epidemics, and regularize slum settlements. We propose an innovative technical solution to redevelop slum areas, curbing future growth and ensuring sustainable development.

Sustainable Development Goals

- **SDG 3:** Good Health and Well-being by facilitating infrastructure upgrades that lead to improved sanitation and public health outcomes in slum communities.
- **SDG 10:** Reduced Inequalities by empowering residents and fostering more equitable access to basic services.
- **SDG 11:** Sustainable Cities and Communities by promoting inclusive, safe, resilient, and sustainable urban development.
- **SDG 16:** Peace, Justice and Strong Institutions by promoting community participation and accountable governance

Motivation

- **Create a Tangible Impact:** Software development offers a powerful tool to tackle real-world problems. We see the potential for our project to directly improve the lives of millions by empowering residents and facilitating data-driven slum redevelopment.
- **Embrace Technological Innovation:** Leveraging advancements in AI technology and data analysis, we can create a solution that is not only effective but also scalable and replicable across different regions in India.
- **Promote Social Justice:** We believe residents should have a voice in shaping their communities. This project seeks to empower them through technology and data, fostering a more inclusive development process.
- **Contribute to a Brighter Future for India:** A nation's success hinges on the well-being of all its citizens. By tackling the challenges faced by slum communities, we contribute to building a stronger and healthier India for everyone.

Abstract

Slums face significant development challenges due to inadequate infrastructure and services. This project introduces a digital solution for slum redevelopment, featuring a community app that provides a live map, government policies, grievance reporting with geotagging, and a reward system to boost resident engagement. A government web portal supports grievance management with AI-driven departmental routing, automated email drafting, and predictive models for slum growth. Additionally, a blockchain system secures land ownership and resident data, reducing disputes and enhancing transparency. This integrated approach aims to improve slum conditions, streamline government processes, and foster community involvement. The project strives to improve living conditions. Ultimately, it aims to create healthier, more inclusive communities across the nation.

Objectives

1. **Resident Participation and Empowerment:** We want to create a platform where residents can actively participate in improving their communities. The mobile app will enable them to report issues, access information about government initiatives, and voice their concerns. This empowers residents to take ownership of their communities and have a say in the redevelopment process.

2. **Improved Data Collection and Monitoring:** Currently, there is a lack of accurate and up-to-date data on slum conditions. Our project will address this by not only identifying critical infrastructure needs of slum residents but also to show the transparency of government policies.This data will lead to more informed decision-making for redevelopment efforts.

3. **Enhanced Transparency and Efficiency:** By integrating data collection, resident participation, and potentially blockchain technology , we aim to increase transparency and efficiency in slum redevelopment projects. This can help reduce land disputes, improve communication between residents and authorities, and ensure resources are allocated effectively.

Challenges

1. **Community Engagement:** Building trust with residents and encouraging their participation in the project is crucial. We need to develop effective communication strategies to ensure the project is perceived as beneficial to the community.

2. **Data Security and Privacy:** It's essential to implement robust security measures to protect resident data and ensure its privacy. We need to be transparent about data collection and usage practices.

3. **Sustainability:** The project's long-term sustainability requires collaboration with government agencies and NGOs to ensure continued support and integration with existing programs.

Literary Survey

Title	Link	Published in
Explainable AI for Sentiment Analysis	https://www.researchgate.net/publication/364085198_Explainable_AI_for_Sentiment_Analysis	In book: ICT with Intelligent Applications (pp.429-439)
Smart Contract for Real Estate Using Blockchain	https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3565497	Proceedings of the 3rd International Conference on Advances in Science & Technology (ICAST) 2020
GPS Based Complaint Redressal System	https://www.researchgate.net/publication/286585630_GPS_based_complaint_redressal_system	IEEE Global Humanitarian Technology Conference - South Asia Satellite (GHTC-SAS)
Assessing Grievances Redressing Mechanism in India	https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=ce76b3c189d041f0c385890309e73d0ef6687827	International Journal of Computer Applications (0975 – 8887) Volume 52– No.5
Planning Slum Rehabilitation/Redevelopment Projects: Evaluation and Learning from Mumbai	https://www.researchgate.net/publication/333209257_Planning_Slum_RehabilitationRedevelopment_Projects_Evaluation_and_Learning_from_Mumbai	Conference: III International conference on Construction, Real estate, Infrastructure and Project Management At: NICMAR, Pune

Tech Stack

1. Mobile Application
   - React Native
2. MongoDB
3. Web Application
   - Frontend
   - React.js
   - Backend
   - Node.js
   - ExpressJS
4. ML Model :
   - Python: The primary language for data science and machine learning.
   - Pandas, NumPy: For data manipulation and numerical computations.
   - Scikit-learn: For machine learning algorithms (classification, regression, clustering).
   - NLTK or spaCy: For natural language processing tasks (sentiment analysis, text preprocessing).
   - TensorFlow or PyTorch: Deep learning frameworks for complex models.
   - Grievance Categorization: A classification model (e.g., Naive Bayes, Random Forest, Support Vector Machine) can be used to assign grievances to appropriate departments based on text content.
   - Predictive Modeling: Time series analysis, regression models(e.g., Random Forest, Gradient Boosting) to forecast slum growth.
5. Blockchain based Smart Contracts :
   - Ethereum
   - Solidity
   - Truffle

REFERENCES

Assessing Grievances Redressing Mechanism in India	https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=ce76b3c189d041f0c385890309e73d0ef6687827
Challenges of drainage and sewage systems in urban slums	https://timesofindia.indiatimes.com/blogs/voices/challenges-of-drainage-and-sewage-systems-in-urban-slums/
Waste crisis panel explores introduction of composting plants in slums, urban villages	https://www.hindustantimes.com/cities/gurugram-news/waste-crisis-panel-explores-introduction-of-composting-plants-in-slums-urban-villages-101720809887067.html
Slums in India: Issues and Policies	https://www.employmentnews.gov.in/NewEmp/MoreContentNew.aspx?n=Editorial&k=178
10 Facts About Mumbai Slums	https://borgenproject.org/10-facts-mumbai-slums/
Democracy In The Dark: The Story Of Mumbai And Its Slums	https://www.outlookindia.com/national/democracy-in-the-dark-the-story-of-mumbai-and-its-slums-news-211546

Thank You