AI and ML Enabled Smart Cities Information Management System for Disseminating CSR Initiatives

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Abstract. Artificial Intelligence and Machine Learning enabled smart cities have become a crucial part for the development of a country, it allows the data to be gathered in such a manner which gives track of all the records. This study focuses on these smart cities in to collect information which can be helpful in identifying the gap and ultimately improve them by making developments by the Corporate Social Responsibility initiatives. This paper introduced a conceptual model where the corporate can be directly linked to the audience where there is a need for development. This will help in upliftment of the society and medium for the corporate to pay back to the society. This study focuses to help corporate and the audience to directly connect for any kind of support. This is a conceptual study where the need for such a platform is identified and in future it can be developed to initiate the development of the society and to make CSR initiatives transparent which will ultimately be beneficial for the creation of goodwill and brand name for the corporates and on the other hand the needy full will be facilitated out of this. At present there is no such application or platform where both the corporate and public can be connected to each other directly to work towards the betterment of the society, in future more work can be done in such platforms to facilitate the development of the society as a whole.

Keywords: Artificial Intelligence; Machine Learning; Smart cities; Corporate Social Responsibility Initiatives.

1 Introduction

In the current scenario the main focus in the development of the economy is on smart and intelligent cities because of emerging use of AI in every sector of the economy [i] and to improve the lifestyle of people, optimize city functions and promote economic growth. [ii] As estimated by 2050, approximately 5 billion people (68%) will be relocating in cities. In order to make a comfortable and cost-effective lifestyle in cities, the city must be smart and intelligent. It is specifically proficient through an intellectual decision-making procedure using computational intelligence-based technologies. This research paper helped in discovering how artificial intelligence (AI) is being used in the smart city concept to gather information so that a model can be created to classify different cities on the basis of location, region, infrastructure development and to identify government initiative in those particular collected about the patterns and predict future trends based on historical data. By grouping cities with similar characteristics ML algorithms help in categorizing cities based on common features. AI assists in providing real-time data based on different situations of various cities. The contribution of AI and ML is significantly essential for this process [iii]. With the help of AI and ML smart cities have focused on to encourage efficiency and performance of urban fabrics. [iv]

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The analysis of data can be done through AI which permits machines to execute complex tasks that would normally entail human intelligence and human intervention. With help of AI complex to complex tasks can be performed with no time and with meticulous accuracy and reliability. The accuracy of achieved results is understood to increase with more data and processing as machine learning occurs; hence the primordial need for Big Data and the desirability of real time data. As cities are increasingly digitized, the role of Information Communication and Technology (ICT) in urban fabrics have been widely covered. [v]

In this research paper, a model is proposed wherein an app will be created in which those companies who are into CSR initiatives will be connected with such people who feel the requirement of development in critical issues arising in the society. The need and significance of this study focuses on enhancing transparency to foster trust with the government and society, help in improves impact measurement which includes help in enhancing proper utilization of the resources and it will benefit in fostering streamlined communication with the public also with this the study will regions. [vi]AI and ML models help in analysing the data measurement of the actual effectiveness of CSR initiatives. All these factors would help to create a platform where companies could provide support to the areas which needs improvement without wasting considerable time searching for funding and resources.

1.1 Objectives of The Study

- To frame a model based on the smart cities information management system.
- To extract data from the smart cities management system for categorizing the cities.
- To help in categorizing the allocation of the resources in the cities.

2 Literature Review

(Z Ullah, F Al-Turjman, L Mostarda, 2020) In this study talks about the latest trends and progresses in smart city research regarding diverse intricate problems and use cases accomplished by academic experts and industries has been reviewed and explored the role of AI, ML and DRL (Deep Reinforcement Learning) in the evaluation of smart cities. [vii]

(MEE Alahi, A Sukkuea, FW Tina- 2023) This research study discovers the probable of the modern technologies empowered by the numerous new trends of IOT – Internet of things and the available zero apps and libraries in smart cities. [viii]

(S Ahmed, MF Hossain, MS Kaiser, 2021) This study discourses the security issues in smart city applications, and conforming counter measures by using AI and ML. added, some efforts to facilitate these protection and privacy problems are then offered for smart health, transport and energy. [ix]

(Herath & Mittal, M,2022). This research paper talks about AI implementations in the various fields of smart cities like education, healthcare, management of waste, mobility, city planning, smart transportation, agriculture, risk management, safety and security. Further, determined that the cities may have several benefits from implementing AI into smart cities by mechanizing and automating operations, and also reduces the chances human error, making effective decisions driven by the data, refining of the environment through different

arrangements, implementing new marketable potentials, and mechanizing effective urban management. [vi]

Javed, A. R., Ahmed. et.al (2023). This research study widely surveys the current and future developments in XAI technologies for smart cities. It focused on the societal, industrial, and technological trends which initiated the determination towards XAI for the smart cities. The paper further discussed about privacy, security, regular compliance, legal and ethical issues for implementing XAI in smart cities and provided a route map for future research directions. [x]

Jha et al., (2021). As stated in this paper, the numerous use cases of AI and IoT for urban planning to achieve and build smart and sustainable cities. The study of this paper mentioned about the modern technologies being used for modern city planning and building high-tech infrastructures. The projected research work has reviewed various papers that could possibly be used in the progress and development of smart cities. [xi]

Gera, B., Raghuvanshi, Y. S., Rawlley, O., Gupta, S., Dua, A., & Sharma, P. (2023). This paper discussed about the key vision of 6G communication technologies and the existing issues with the existing network generations. Further, analysis was conducted on the benefits and challenges of blockchain enabled IOT and modern techs for the smart cities' application and planning. [xii]

3 Methodology

This research paper objects to propose a conceptual model based on AI and ML enabled smart cities information system application as shown in Fig 1 for disseminating CSR initiatives. Here, in this paper a model has been projected to form a platform for the companies as well as for the general public so that the companies who are indulged into CSR initiatives can use the platform where they can post about their CSR initiatives and make general public observant about their CSR initiatives that they are into it. Also, the public or the firms who provide support for the society (for ex Non-profit organizations, NGOs) can also present the matters and post it can get the assistances from the companies who are previously working on those matters or resolving the problems of the society. This model also includes the data from verified government websites so that the data or information would be authentic and verified. This model is based on AI and ML enabled smart cities information system which helps in leveraging technology and data to improvise the quality of life for the citizens of the smart cities. The application is structured as Fig. 2.

This application aims to connect the Communities in need with the companies performing CSR activities in an online and public platform, which will make this whole process transparent and effective. This application uses the Government verified data to locate the communities or places which require the involvement of CSR activities and help those communities to showcase their problems to the public and companies that want to diligently perform their CSR activities will take an initiative to help those in needs, and as all of this is taking place in an online public platform every initiative that the companies take will be transparent to the public.

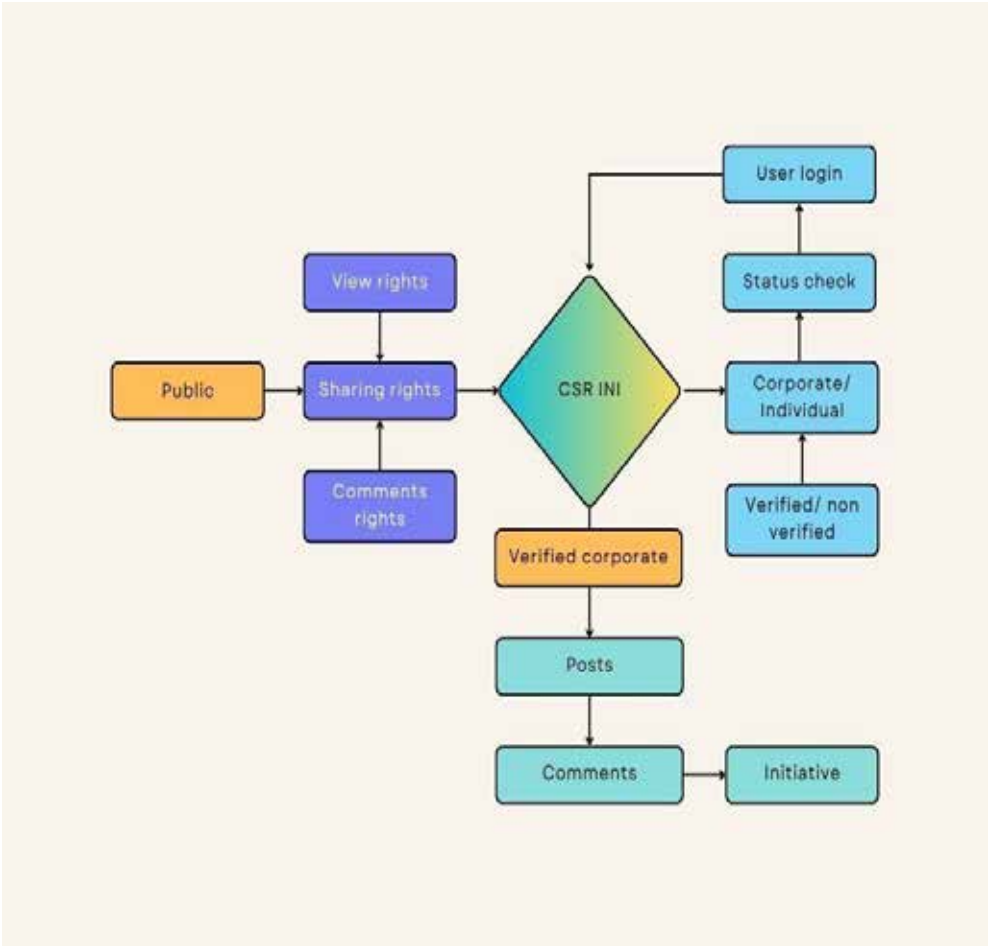

Fig.1. Functions of an application.

This application is a connecting platform for these parties, not only the communities but also the companies will get benefit from this platform, as CSR activities create a goodwill in the public, so such a platform which showcases their work will definitely increase their goodwill in public.

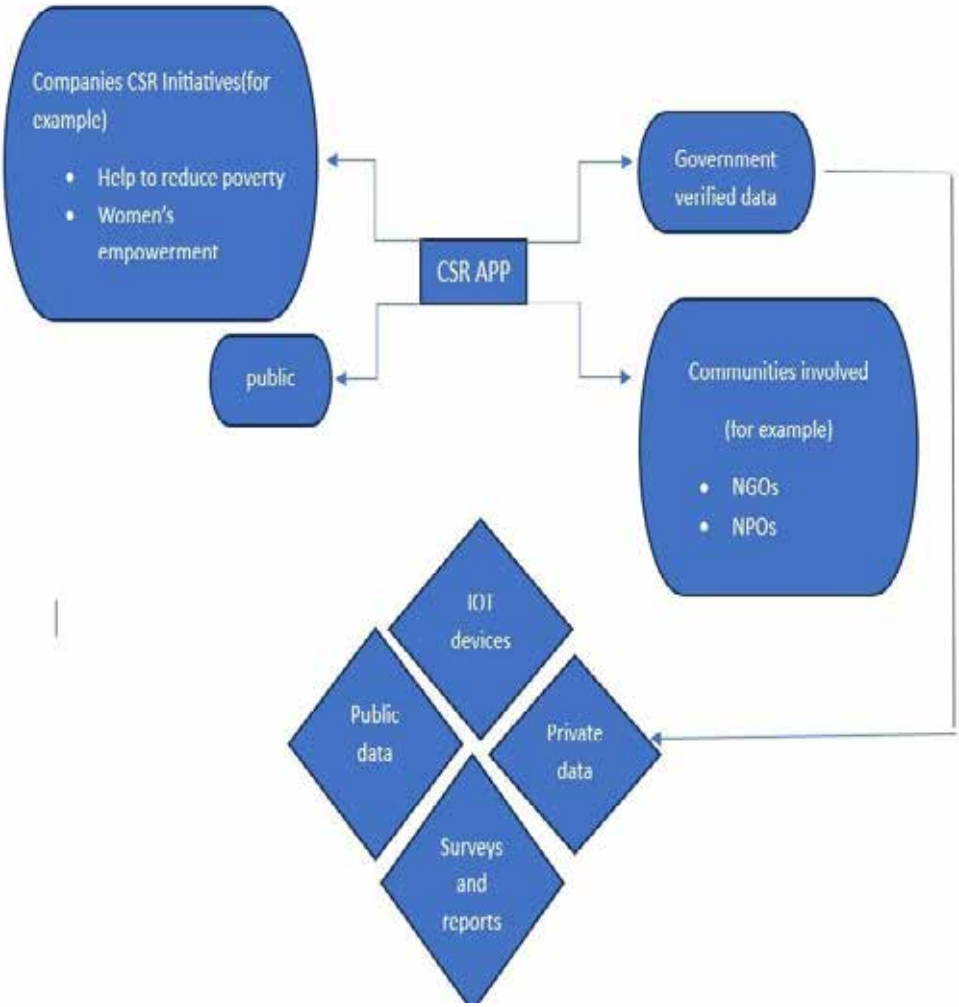

Fig.2. Structure of an application.

The Key elements of this application model are: -

- Government verified data- Government contains a database which holds all the information necessary for us to identify the areas which require assistance, this data will help us measure the authenticity and accuracy of the problem so that the solution reaches where it is needed, as fast as possible.
- Companies' CSR initiatives- Companies require to follow the CSR guidelines to ensure legal compliance, this platform gives them a chance to not only follow their CSR activities but also contribute to the needs of the people where necessary, thus increasing companies' goodwill in the process.
- Communities involved- These communities are the group of people who require resources to overcome the problems they are facing; these resources will be

provided to them with the assistance of the companies performing CSR initiatives. These communities are deemed legitimate with the help of the data which is obtained from government sources.

- Public- This application will also have general public in its platform so that these activities which are taking place are transparent and easily trackable, the public will be informed directly from the original and authentic sources about the activities they are conducting. This will also motivate the general public to post about their problems in the platform, thus increasing engagement of the platform.

Modern urban environment changes at a very high rate, and every city has its problems that is hard to solve due to socio-economic, environment, and infrastructural differences of the cities. In regards to these diverse problems, it is important to identify what particular issues require attention and resolution in different urban territories. This model will help us categorize the cities based on some parameters and those parameters will help us differentiate one city from the other and help us in deciding the unique set of solution which we can bring for that city.

This model categorizes the cities into 4 parts based on some unique characteristics: -

- "C1"- These cities are the ones which are heavily facing the issues regarding the Water scarcity, solid waste management, traffic pollution, environmental concern. These types of cities are facing a lot of issue which compromises of environmental concerns and mismanagement from government and other higher authorities.
    - "C2"- These cities are facing the problems regarding the underdevelopment of infrastructure, cities facing heavy unemployment regardless of the fact that it is a high population city, Lack of digital infrastructures which ensures smooth usage of digital services in the city, Poor urban planning which makes the quality of life of the people living there very gruelling.
    - "C3"- These cities face problems which are majorly due to lack of transportation available to the public, Poor medical facility for the people which leads to other complications that those people have to face, these set of cities have abundance of resources but lack in the capability to utilize it in an efficient manner, lack of education to the common public is also some of the major problems that the public of these set of cities have to face.
    - "C4"- These cities face problems regarding the basic amenities that a person is not able to receive due to lack of resources unlike the C3 cities which have abundant resources, these cities do not have abundant resources to meet its requirement, such as Food scarcity, lack of electricity, water scarcity, etc. with proper management of resources these issues can be easily solved.

4 Conclusion

This research study aims to propose a model through which a platform could be created for the companies who are into CSR initiatives and the public or communities who are in need. This is going to be beneficial for both the parties as companies who are into CSR initiatives would post about their CSR initiatives on the platform which will help them to create goodwill and transparency on the other hand people or communities who are in need of help for the particular issues or for the development of their area can seek help from the platform by viewing and posting in the platform which can be put Infront of the companies who are into CSR initiatives and can directly help them [xiii]. Basically, it is going to create a link between the two, one who wants to help the society and the one who actually needs help.

This study aims to frame a model based on the smart cities information management system, extract data from the smart cities management system for categorizing the cities and help in categorizing the allocation of the resources in the cities. These objectives were achieved by creating a proposed model by thorough analysis and understanding the requirements of the AI and ML enabled smart cities for disseminating CSR initiatives[xiv].

By this proposed model it came out that it is very important to have such a platform where both the parties can be linked together for the betterment of the society as well as the corporate [xv]. As it is going to help in the development of the society as a whole.

5 Discussion and future scope

We may also implement technologies like Blockchain [xvi], Cloud Computing optimisation[xvii] to enhance the security and usability of the application.

In this research we proposed a conceptual model on an application that can be created in the future so, this is just a concept no such application is in work or there is no such platform where corporate and public are directly linked with each other. For future this type of platform can be created and more study can be done on this area for the advancement of the society and full utilization of the resources.

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