

ONLINE SOCIAL GRIEVANCE REDRESSAL USING BLOCKCHAIN

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Abstract : In recent years there has been a sudden growth of online social media. Every day, government accounts receive thousands of messages from the general public in the form of opinions, concerns, and grievances. It becomes an extremely troublesome task for the concerned ministries in the government, to manually filter out the irrelevant messages and respond to the genuine ones. Also, along these lines, no move is made by the administration services on the significant concerns or the complaints of the general population. In this paper, the endeavor is to develop an Online Social Grievance Redressal System wherein individuals can post their grievances and they would be automatically segregated under that similar category by utilizing learning algorithms. We have considered the Random Forest Algorithm to Categorize and compare the grievances and these outcomes to determine the most effective learning algorithm.

Keywords - Grievance, Grievance Redressal System (GRS), Learning Algorithms.

I. INTRODUCTION

Modernization calls for innovative automation. It considerably reduces the number of human efforts to perform tasks. Environmental concerns, limited exploration in renewable alternative energy sources makes it paramount to use energy efficiently. Energy is an important parameter when considering the impacts of technologies on the environment. With the increasing demand for roads, highways, smart cities, and clean cities there is a need for a system that handles all these tasks. To manage these tasks, we require a huge team and these team is bound to make mistakes or ignore little tasks which cause huge issues to the citizens. The issues need to be solved as early as possible and therefore there is a need to develop such a system. The social grievance system is the most noticeable system that can solve such issues. These systems are meant to provide a quick solution to citizen's problems. Conventional grievance systems use a non-transparent system through which there is a need to store a huge amount of data. This system is only in the hand of the operating committee so the data can be deleted intentionally.

The paper proposes a transparent system in which each and every grievance posted by the citizens is visible to all n also can be supported by the others if they are facing the same issue. This system reduces lots of data because there is no need to upload a grievance if the grievance is already posted, the citizens can simply support that grievance. This support count helps the government to schedule its work efficiently. To see citizen's opinions on the particular grievance, the government can make use of the comment section. The status of the work can be updated by the government on the system. If a particular grievance is not resolved in a certain duration then that grievance is escalated to a higher authority.

II. LITERATURE REVIEW

The following research articles are selected for review, keeping in mind the traditional and conventional approaches of grievance system:

Sanam Kazi et al. worked on the smart e-grievance system. As most of the people now are more addicted to photos and selfies, the system proposed by us will be more relatable to the youth. In our day to day life, we face many problems, which we think of bringing in the notice of the concerned authorities quickly without the tedious process. In the system proposed by us, the user can upload complaints in the form of images, videos or text. The local authorities will get to see a sorted form of these complaints. The other registered users can also see the different problems lodged by the people in their or the other locality. [1]

Shiv Kumar and Shrawan Kumar worked on the Advance E-Governance system, where they proposed an idea for applying for documents like Pan Card, Passport, driving license, etc via the online portal using the internet. The administration will be done by some NGO or by some private organization in order to maintain transparency. The government will also keep the platform updated with news, weather forecast, etc. [2]

Indra Thanaya et al. worked on Identifying Actionable Information from Social Media for Better Government-Public Relationship. There is a need for a system that can automatically identify genuine thought to be filtered from the vast amount of information directed at government accounts. The ability to detect the actionability of textual messages can help the government to reach a vast global audience, reduce latency in the addressing of concerns and improve the efficiency of the government, thereby leading to effective governance. In this paper, we propose a methodology to solve this under-explored problem. We explore various machine learning models that can learn from the past data and automatically classify new messages as actionable and non-actionable. [3]

Poonam Malik, Priyanka Dhillon, and Poonam Verma worked on their paper E-Challenges and Future Prospects for E-Governance in India. The idea revolves around sectors like the relation between G2G, B2G, G2B, C2G, and G2C by using ICT. The use of Information and Communication technology has revolutionized many sectors and this will surely bring a drastic change if implemented by the government. The author even quoted, "India can have many award-winning E-Governance projects instead of poverty and illiteracy." [4]

Kiran Yadav and Sanatan Tiwari worked on E-Governance in India: Opportunities and Challenges in which they proposed various solutions to challenges like lack of infrastructure, awareness, literacy, and others while implementing E-Governance. Infrastructure and literacy are two major challenges in India. [5]

Razulaimi Razali et al. worked on Complaint Handling Theoretical Framework. The purpose of this paper is to propose a theoretical framework for the complaint handling process. The theoretical framework focus on the information system perspective is designed by combining reliable attributes based on prior research analysis. [6]

Wei Zhang, Yu Zhang, in their paper, E-government Application in Combating Corruption, attempts to summarize Chinese governmental initiatives on electronic anti-corruption system construction by a comprehensive survey on official websites of NBCP(National Bureau of Corruption Prevention of China)and MoS(Ministry of Supervision). Further they divided their findings into 4 models which were monitored respectively. [7]

He Xiao ke, worked on Study on E-government and the relationship between the government and the public and stated that relationship problem between the government and the public is the fundamental problem and should be solved to attain social stability and harmony. Some efforts should be taken to promote the relationship between government and public in E-government environment. Focus should be on building public- oriented interactive response mechanism and using the official website as the platform to integrate government information resources. [8]

Cai Lihui, worked on, E-government: Government Re-engineers in the information age, where it concluded on the working and interaction type of government. There are mainly two types of interactions, i. Government to Government (G2G) and ii. Government to the public (G2P). The paper also concluded that public interaction with the government is the most important factor in development. [9]

Kang Yijia, worked on the paper, “Establishing the service-oriented interactive government in E-government environment”, where it stated about various services offered by the government for development. The environment was meant to be interactive so that the government and the public could interact. The platform was like a bridge between the government and the public. [10]

III. PROPOSED SYSTEM

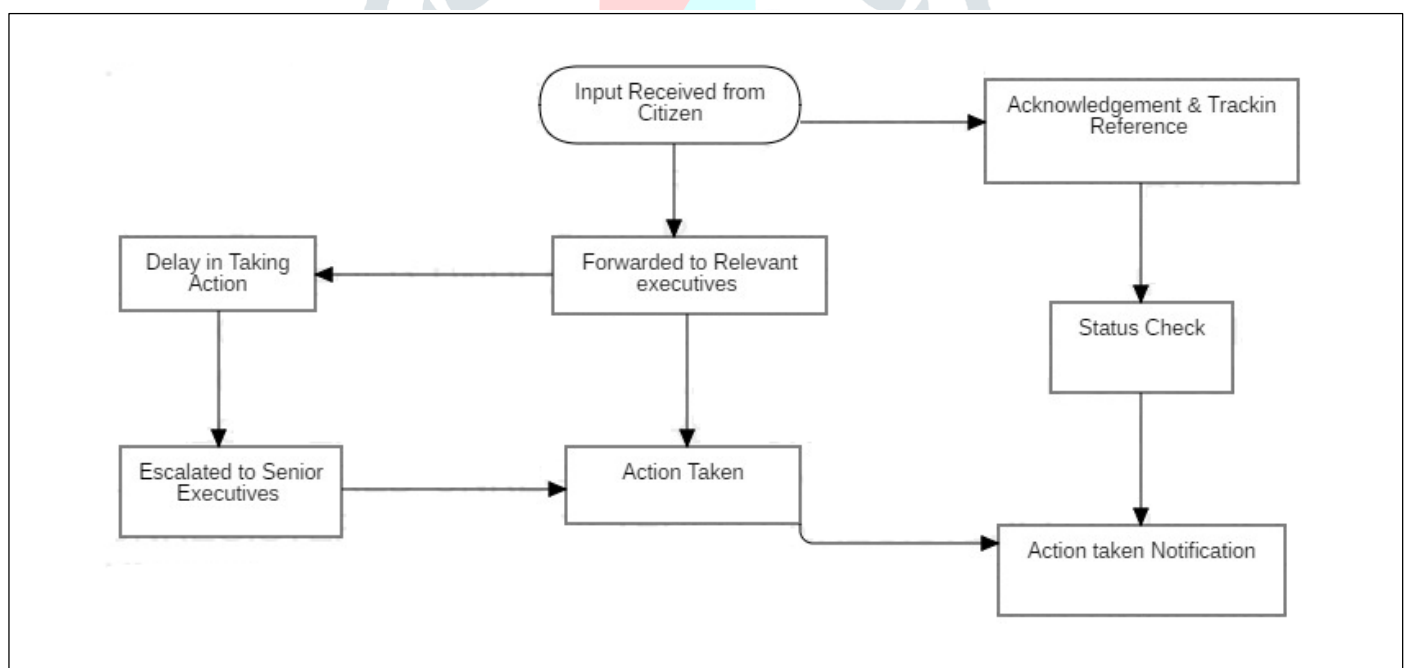


Figure 1. system architecture.

The user first has to sign up and register their account and then log in to their account. The user then has to enter their location or allow the application to automatically track the user's location. After this step, the user can upload their complaints or grievances in the form of images and text. After the user has uploaded their complaint they can track their complaint's status. The local concerned authority responsible for the grievance can log-in using their account and then after the log-in, they'll be able to see the complaints in a sorted order based on the support received for the grievance.

In the model, after the citizens upload their grievance, this input is then forwarded for acknowledgment and tracking purposes. The input is then forwarded to the relevant executives to take action against that complain. If the executive is not taking any relevant action against the complaint then that complaint is escalated to the senior executives to take some action against the complaint and

also the executive which was assigned for that grievance. The citizen can check the status of the grievance anytime they want. After each update in status, the citizen gets the notification on their device.

The system will be made using BlockChain technology to avoid intention or accidental loss of the data. Various agencies like government, NGO or some private sector organization will have access to the database. Since BlockChain technology uses a hashing concept, the data deletion could be tracked very easily and can also be recovered.

The biggest advantage of this system will be that the issues or grievance can be seen by all the registered users thus they can concur with their views to solve the issue. Almost 90 percent of the grievance platform does not have this feature as the complaint which is registered can only be tracked by that user. Since the new system will be more open, users could see other complaints also and could also support that complaint. Now they don't need to post another complaint about the very same problem they can simply support that particular grievance and can also share their views in the comment section. Thus there are fewer duplicate data in the system.

Government officials are required to solve a particular problem in a certain time otherwise the grievance will be escalated to the higher authority. For classification of the grievance, the Random Forest algorithm will be implemented because it gives better accuracy than compared to other algorithms like Extremely randomized trees, KNN, decision trees, etc. Random Forest algorithm gives an accuracy of 92.02 with an F-score of 95.32. [3]

Algorithm used	Accuracy	F-score
Random forest	92.02	95.32
Extremely randomised trees	90.83	94.58
KNN	90.89	94.48
Decision Tree	89.09	93.35
Logistic Regression	82.6	90.29
Naïve Bayes	80.85	89.01

The system will also have additional features like news, forecast, government job openings, etc. These features will make the platform more interactive. The government can also spread messages about their campaigns through this platform. All these features in the proposed system will make the platform more transparent and will build a better relationship between the government and the public.

IV. RESULTS AND DISCUSSION

Figure.2, shows the feed, where the user can support other complaints and can comment their views for the following. The are various options available on the feed page to expore various services offered by the platform. There is search bar to search particular complaint with filters like City and Compliant type.

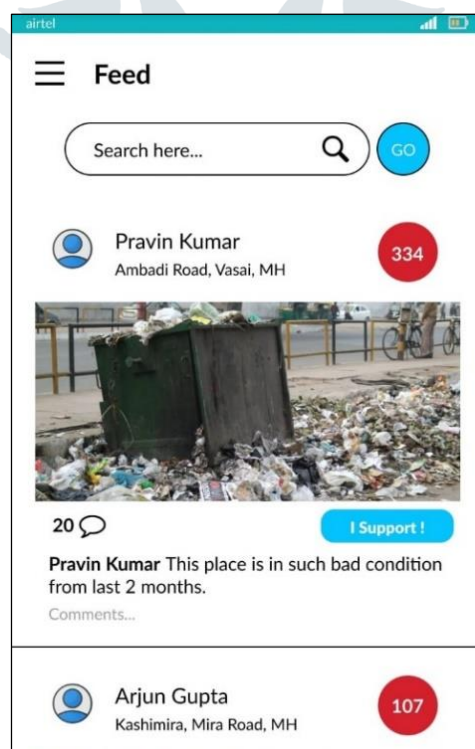


Figure 2. feed page.

Figure.3, shows the Post Acknowledgment for the user. The acknowledgment contains Application No, Date, Location, Type. The following complaint will be registered with the government.



Figure 3.post acknowledgment.

Figure.4, shows the user profile where list of grievance is displayed and is categorized into two types, Direct Grievance and Supported Grievance. Overview of the grievance is also mentioned.

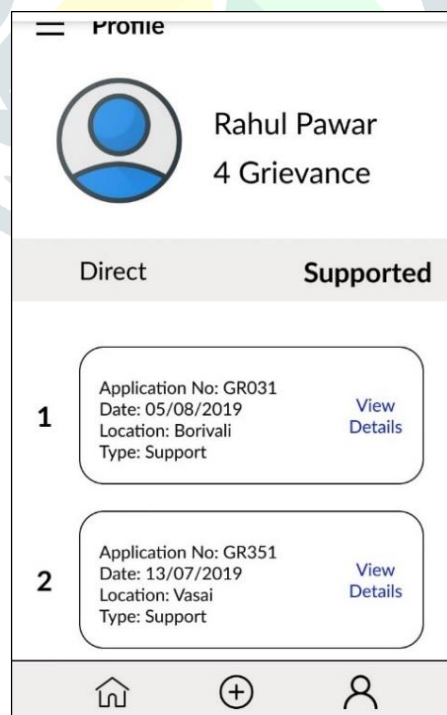


Figure 4.user profile.

Figure.5, shows complete details of the posted grievance with Image, Name, Application Number, Location, City, State, Title, Description.

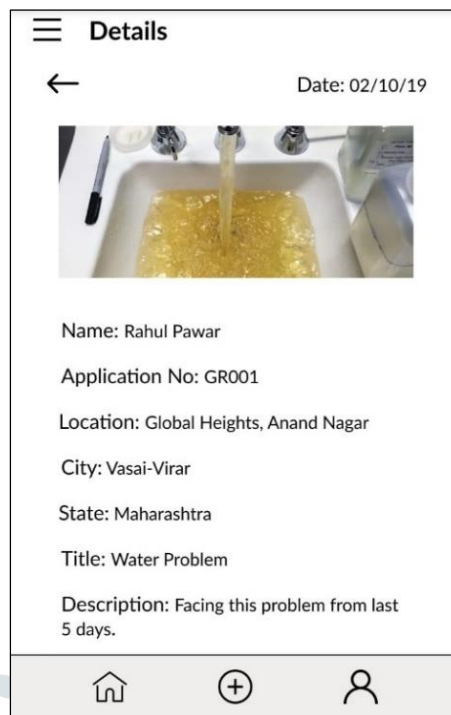


Figure 5. grievance details.

V. CONCLUSION

The system proposed in this paper can efficiently save a large amount of data by managing the grievance effectively. Usual conventional grievance data are replaced with a transparent grievance portal to minimize the multiple grievances of the same type. This system is completely build using BlockChain because of which the integrity of data is maintained. The system is developed to minimize the data by supporting the already posted grievance if a person faces the same issue. Additionally, the system provides a provision to prioritize the grievance for the government based on the support received to a grievance. Also, a comment module is added to express once opinion on the grievance. This system proves to be more beneficial than the current system in a variety of aspects. This system has been implemented using the latest technologies and advanced tools. Further with multiple additions, the current system can be used to serve multiple purposes. The system can be modified with the help of machine learning techniques to avoid duplication of grievances. Also, by image processing, the grievance can be categorized using the images uploaded by the citizens. This system is adaptable to further additional implementations.

REFERENCES

- [1] Sanam Kazi, Sadiya Ansari, Mahvash Momin, Abbas Damarwala, "Smart E-Grievance System For Effective Communication In Smart Cities", International Conference on Smart City and Emerging Technology, 2018.
- [2] Shiv Kumar & Shrawan Kumar Sharma, "Advance E-Governance System", International Conference on Energy, Communication, Data Analytics and Soft Computing (ICECDS-2017).
- [3] Himani Garg, Charu Bansal, Rishabh Kaushal, and Indra Thanaya, "Identifying Actionable Information from Social Media for Better Government-Public Relationship", 10th International Conference on Developments in eSystems Engineering 2017.
- [4] Poonam Malik, Priyanka Dhillon and Poonam Verma, "EChallenges and Future Prospects for E-Governance in India", International Journal of Science, Engineering and Technology Research (IJSETR), Volume 3, Issue 7, July 2014.
- [5] Kiran Yadav and Sanatan Tiwari, 2014, "E-Governance in India: Opportunities and Challenges", Advance in Electronic and Electric and Engineering, ISSN 2231-1297, Volume 4, Number 6 (2014), pp.675-680.
- [6] Razulaimi Razali and Jafreezal Jaafar, "Complaint Handling Theoretical Framework", Internatinal Conference on Computer & Information Science (ICIS), 2012.
- [7] Wei Zhang, Yu Zhang, "E-government Application in Combating Corruption", International Conference on Information Management, Innovation Management and Industrial Engineering, 2011.
- [8] He Xiao ke, "Study on E-government and the relationship between the government and the public", International Conference on Management of E-Commerce and E-government, 2010.
- [9] Cai Lihui, "E-government: Government Re-engineer in information age", Beijing: China Social Science, 2009.
- [10] Kang Yijian, "Establishing the service oriented interactive government in E-government environment", Journal of the party school of CPC Leshan, Vol-11, no-3, July.2009, pp.71-72.