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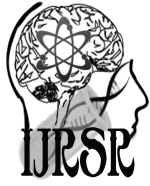
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## Research Article

### ENHANCING VARIABLE VOLUNTEERED GEOGRAPHIC SYSTEM BASED ON POINT ALLOCATION WITH SECURED VORONOI CELLS

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Voronoi cells, administrator, point allocation.

#### ABSTRACT

In the VGS system location and time are main constraints for helping in the user's query. The users as well as the responders are volunteers who have already registered into the system. In the existing system the time constraint is not given preference. This project is to implement VGS with both location and time as the mandatory constraints. This proposed system is developed particularly for communication during emergency. User has to register in to the system by uploading a government authorized proof for validation of user by admin. The admin does this validation by taking the government proof id number and checks it with the database. Only if the id numbers are true then admin allows the user in to the system. Once admin allows the user, the user can upload query in the system. The timer starts counting down until the user gets the response. If there is no response then the area of safe zone is extended to some random square kilometers. After getting the response the user and the volunteer can communicate using the chat option. If the user found that the responder's response is irrelevant to the query then the user itself can block the other user. If any user gets more than two blocks the admin will remove that user.

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#### INTRODUCTION

In the VGS system the person who wants to enter in to the system has to register by providing the government authorized proof with digital signature specifying that the proof is provided only for the registration purpose. Through this the user's proof will be more secured. We have admin module to monitor the VGS system. Admin module will allow or deny the user after verifying the proof. If admin found that the proof is fake, then admin deny the user. Once the user registered successfully he can post the query with their location in the system, that query will be passed to the user's who are in safe zone with some preset time. We call the responding user as volunteer because they volunteer their service to others within preset time. Volunteers provide service description and periodically updates their location. Volunteer can reply to the user query based on their interest. Once the user gets response from the volunteer they can communicate with each other through the chat option. The safe zone will be increased if the user didn't get the response within preset time. The safe zone will be decided using the secured voronoi cells. This safe zone will be increased up to three levels. The user or volunteer itself can block user or volunteer who found as fake. Admin removes

the user who got more than two blocks. This makes the VGS system more secured.

##### Administrator

The administrator has important role in making the VGS system more secured. The administrator monitors the whole system and the user. If the volunteer needs to enter the VGS they have to register for it. During the registration the volunteer has to upload a government id proof with digital signature specifying that the government proof is provided only for the registration purpose. Through this the VGS system is made more secured and the user's information also secured here. The id number is then checked with the list of numbers in the database. Only if the information about the user are true then administrator allows the user otherwise admin will deny the user. Here, consider the voter id as the government proof with digital signature specifying that this id given only for registration purpose and user uploads it, now the administrator checks it with database with voter id number. This validation makes the system more secured than the existing system.

##### Dispatch Query

Once the user has registered in the system, he has been allowed by the admin to enter the VGS system. Then the user can

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upload a query in case of emergency for help. The user's latitude and longitude information are gained and the safe zone is constructed using the secured voronoi cells. The query will be uploaded with some preset time. Now the query will be visible all volunteers who have registered in the VGS system belonging to the safe zone. A notification will be given to all volunteers in the safe zone for the query.

### Response

We call the responding person as volunteer because they volunteer their service to the other users. Once the volunteer has viewed the query, he can respond to that user query using reply option. The volunteers will respond to the query based on their interest. This reply is also visible to all volunteers of the safe zone. If the user wants to communicate with the responder he opens up the chat option. They will communicate with each other through this chat option.

### Timer

Timer is the new criteria introduction in the proposed model. Whenever a user uploads a query for help a timer is attached with it, it starts counting down until it gets the response. If there is no response the safe zone region is extended to a random value and the timer is reset again it counts down until the user gets a response from the new safe zone. Similarly the third level extension is also done.

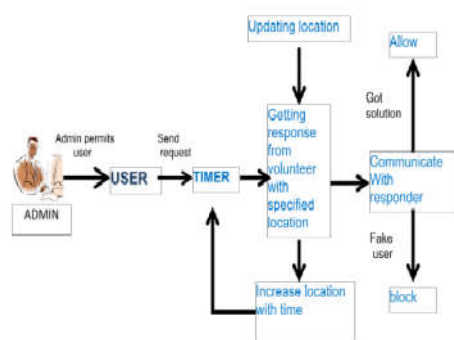
### Communication

When volunteer responds to a user, the user quickly uses the chat option to communicate with volunteer and gets all details and give him details for help. If the user found that the volunteer is not answering relevance to the query then user can block the volunteer. If volunteer found that the user is actually not required any help then volunteer can block the user. If the query is being solved then the user can remove the query from the system.

### Block and Removing the User

If the user found that the volunteer is not answering relevance to the query then user can block the volunteer. If volunteer found that the user is actually not required any help then volunteer can block. If the any volunteer or user gets two blocks then that person will be removed by the admin from the system forever.

### Architecture Diagram



### Explanation

The user while registering in the system has to provide a government authorized proof. The admin validates the user on

the basis of this and allows the user only if the proof is original. The admin does this by checking it in the database. Since the government proof is misused encryption also provided. Once the user is allowed by the admin the user can send his request. As the sender sends the request the timer is being set and starts counting down until it reaches null. If the gets the response then the timer stopped and user can communicate with the user along with specifying their location. If the user doesn't get any response then he extends the area and the timer is reset again for this enlarged area the timer starts counting down. If the user gets the response he communicates with responder else the area is again extended. If the user found that the responder responds irrelevant for the request being uploaded. Then the user can block the user without the help of admin. If any user gets two blocks the admin removes the user from the system.

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