Disaster Management and Detection System

Nareshkumar Mustary, Komal Nagarkar, Kajal Musale, Rutuja Kale, Pratiksha Parekar

Department of Computer Engineering, Dr. D. Y. Patil Institute of Engineering, Management & Research,
Akurdi, Pune, Maharashtra, India

ABSTRACT

Dealing with disaster could be a human process that requires public support for coming up with. It needs to be property within the lightweight of challenges expose by non-renewable resource utilization, global climate change, growth and imbalances of wealth. Emergency, not only includes nephrotoxic spills and industrial explosions however conjointly the floods, storms and earthquakes. Disaster management essentially deals with the management of resources and knowledge towards a disastrous event and is measured by however efficiently, effectively and seamlessly one coordinates these resources. the power to effectively traumatize disasters has become a challenge to fashionable technology. Disasters maybe divided into fast disasters and continuing disasters. Earthquakes, floods and tsunamis are thought of as fast onset disasters whereas civil wars, droughts, famines and epidemics are the continued or future disasters.

Keywords : Non-Renewable Resource, Rapid Disasters, Continued Disasters, Fashionable Technology, Haversine Algorithm.

I. INTRODUCTION

A disaster is haphazard event within which the needs of the affected community outweigh the available resources. A disaster happens somewhere within the world nearly daily, but these events vary significantly in scope, size, and context. Large-scale disasters with various casualties' square measure comparatively uncommon events. Certain wide publicized disasters, including events such as the terrorist attacks on September eleven, 2001, Hurricanes Katrina and Sandy, and the Boston Marathon bombing, have focused people's attention on disaster designing and readiness. Disasters are getting more frequent, and also the variety of persons affected is additionally increasing. This larger morbidity is imputable not solely to the larger number of events, however additionally to the population dynamics, location, and susceptibilities. Disaster management is however we tend to deal with the human, material, economic or environmental impacts of the same disaster, it is the process of however we tend to "prepare for, respond to and learn from the results of major failures". although typically caused naturally, disasters will have human origins. A disaster occurs once a hazard impacts vulnerable people. the mixture of hazards, vulnerability and inability to scale back the potential negative consequences of risk results in disaster.

II. Literature Survey

Disaster Management and planning are the thrust areas for so many years due to increased risk, vulnerability, and fatal Disaster consequences. Each government throughout the world along with the UN(United Nations) [2] are putting lots of effort into this area. Humanity has suffered several times not only in terms of economic & infrastructure losses but tragically with great death tolls. Miller et al.[3], in their study has shown that the impact of Disaster is aggravated by the interdependencies of organizations as well as their dependencies on a computer, telecommunication and other technological products.

Further, they have suggested that the disaster Management process should be business-driven. They mainly focused on the interruption of organizations' business or Service activities, and suggested that advance planning must be done to assess the risk and its probability to mitigate 16 the Disasters. But their scope was limited to suggest few software packages suitable for documentation, database management and generating lookup tables and checklists. In turn a comprehensive framework would be necessary.

According to Higashida et al. [4], information processing could be an important task in any emergency. It's not spare to gather data and information however the challenge is in extracting intelligence and knowledge out of those. They additionally recognized that the primary task, now when a Disaster is to know the particular Hazard, its impact at Disaster location, its surroundings and damages occurred. Now of read has been taken forward during this analysis work. They further, prompt that thenceforth, the setup has to assess - what area unit the various forms of Resources needed and to get there mobilization attempt to answer the Disasters.

Here it's going to be noted that it might take a considerable quantity of your time and would successively make the Disaster Management slow. The the paper additionally emphasized the role and continuous training of Human Resource within the call and execution method, as interdepartmental coordination could be an essential issue for the effective Disaster Management. This side of coordination has to be systematic properly. Nikam et al. [5] elaborate the management a cycle of the Disaster by the varied phases that Is - bar, readiness, response, recovery, mitigation, and risk reduction, and also, the preliminary efforts created, use of web based application for Resource networking with restricted access to instrumentation, human Resources and provides. However, this would call for associate degree integration of services.

IDB technical report [6] highlights the needs and ways to assess the chance management capabilities at the national level by way of assorted parameters. This could facilitate policymaker to gauge the effectiveness of their policies and investments, notably in terms of risk management capacities. This the methodology provides the way to live key elements of vulnerability rife within the country facing natural Hazards. Other researchers, Kondo [7] highlights the preparation and readiness of Govt. of Japan wanting to the lesson learned from the past 17 Disasters and Calamities. Their efforts area unit focused to seek out missing individuals, to know the needs of the voters in/during Disaster, traffic help, broadcasting associate degree early warning messages and alternative data etc. Thus the previous data becomes terribly helpful.

Similarly, Magiswary et al. [8] did a survey of the Disaster readiness in Malaysia giving a form to the heterogeneous cluster of peoples and studied their perceptions of Disaster problems and preparedness towards them, and emphasized that fascinating data and understanding is lacking to a nice extent. They additionally emphasized that the Disaster

Management needs correct and quick higher cognitive process throughout mayhem, for the current and future activities, and to create the entire set up effective it's necessary to use the experiences gained within the previous Disasters. But there was no clear direction however this past information and data are often utilized. To conquer the varied emergencies, the govt of Republic of India in collaboration with the international organization .

Development Program [9], [10] is making an attempt to develop a comprehensive Disaster Risk Management Program. Efforts are in progress to assess the vulnerability of various areas in Republic of India thanks to geographical climatic conditions. It is recommended to utilize data and Communication Technology (ICT) for early warning, readiness, and mitigation. ICT in the form of web, information reposting, data mining etc. area unit terribly helpful to develop knowledge warehouse and this will play a significant role exploitation GIS and satellite-based communication within the Disaster risk reduction measures in any respect levels. All such problems' area unit PRE- Disaster and facilitate to scale back vulnerability.

III. Proposed System

In our planned system we tend to area unit exploitation K nearest algorithm and haversine formula to calculate the geographical distance between the affected area and therefore the facilitate centre space. This technique is used to offer the desired assistance to the victims and conjointly to rescue the bulk of people with no hurt.

Architecture Diagram
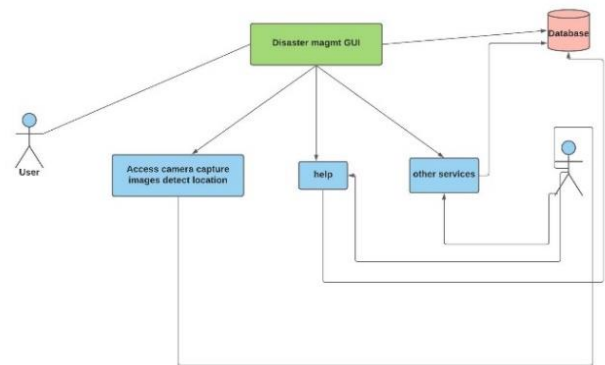
Algorithm

We are considering two area unit exploitation algorithms here:

1.K-nearest neighbour algorithmic program –
This algorithmic program is employed to calculate the space between the user and therefore the facilitate centre and once the calculation, the trail or the neighbour with the shortest distance is chosen. This helps in providing quick service and may conjointly evaluate the time required to satisfy the assistance requested by the user.

2. Haversine formula – The haversine formula determines the great-circle distance between 2 points on a sphere given their longitudes and latitudes. it's primarily accustomed to calculate the geographical distance between 2 locations i.e. points on earth.

IV. Conclusion and Future Scope

Disaster management may be a burning topic within the recent decade. this is often the discipline of addressing and avoiding risks. it's a discipline that involves getting ready for a disaster before it happens, disaster response, similarly to supporting and reconstructing society once natural or human-made disasters have occurred. this is often an endless method by that all people, groups, and communities manage hazards to avoid or ameliorate the impact of

disasters ensuing from the hazards. Effective disaster management depends upon on integration of emergency plans in any respect levels of state and non-government involvement. it'll offer the mandatory facilitate to those who area unit stuck in the situation wherever the disaster is going on. they'll obtain facilitate by causation pictures or messages regarding their condition and acquire first-aid care. The system permits multiple users to access the system and send their requests and solve their problems. The scope of the project is to produce facilitate and services in rural areas. to fulfil the wants, we tend to use a straightforward and basic approach. during this project, the planned approach detects the disaster in rural areas by gathering and storing the pictures of the disaster location and responding to it within the kind of facilitate and standing of their requested question.

V. REFERENCES

[1]. Florida State University: Risk Management Course Description

[2]. IARCP: Certified Risk and Compliance Training

[3]. AMA (American Medical Association). The State-Level Economic Impact of Office-Based Physicians. 2011. September 8, 2013]. http://www.ama-assn.org/ama/pub/advocacy/state-advocacy-arc/economic-impact-study.page.

[4]. PR (Assistant Secretary for Preparedness and Response). National Guidance for Healthcare System Preparedness. 2012. September 8, 2013]. (Healthcare Preparedness Capabilities). http://www.phe.gov/preparedness/planning/hpp/reports/documents/capabilities.pdf.

[5]. Burke RV, Berg BM, Vee P, Morton I, Nager A, Neches R, Wetzel R, Upperman JS. Using robotic telecommunications to triage pediatric disaster victims. Journal of Pediatric Surgery. 2012;47(1):221–224. PubMed].

[6]. Devereaux AV, Dichter JR, Christian MD, Dubler NN, Sandrock CE, Hick JL, Powell T, Geiling JA, Amundson DE, Baudendistel TE, Braner DA, Klein MA, Berkowitz KA, Curtis JR, Rubinson L. Task Force for Mass Critical Care. Definitive care for the critically ill during a disaster: A framework for allocation of scarce resources in mass critical care: From a Task Force for Mass Critical Care summit meeting, January 26-27, 2007, Chicago, IL. Chest. 2008;133(5 Suppl):51S–66S. PubMed]

[7]. Forman-Hoffman VL, Zolotor AJ, McKeeman JL, Blanco R, Knauer SR, Lloyd SW, Fraser JG, Viswanathan M. Comparative effectiveness of interventions for children exposed to nonrelational traumatic events. Pediatrics. 2013;131(3):526–539. PubMed]

[8]. GAO (Government Accountability Office). National Preparedness: Efforts to Address the Medical Needs of Children in a Chemical, Biological, Radiological, or Nuclear Incident. 2013. September 8, 2013]. (GAO-13-438). http://www.gao.gov/products/GAO-13-438.

[9]. Garrett AL, Grant R, Madrid P, Brito A, Abramson D, Redlener I. Children and megadisasters: Lessons learned in the new millennium. Advances in Pediatrics. 2007;54:189–214. PubMed]

[10]. Goodhue CJ, Burke RV, Chambers S, Ferrer RR, Upperman JS. Disaster Olympix: A unique nursing emergency preparedness exercise. Journal of Trauma Nursing. 2010;17(1):5–10. PubMed]

[11]. IOM. Crisis Standards of Care: A Systems Framework for Catastrophic Disaster Response. Washington, DC: The National Academies Press; 2012.

[12]. IOM (Institute of Medicine) and NRC (National Research Council). From Neurons to Neighborhoods: The Science of Early Childhood Development. Washington, DC: National Academy Press; 2000.

[13]. Kissoon N. Deliberations and recommendations of the Pediatric Emergency Mass Critical Care Task Force: Executive summary. Pediatric Critical Care Medicine. 2011;12(Suppl.):S103–S108. PubMed]

[14]. Lasker RD. Redefining Readiness: Terrorism Planning Through the Eyes of the Public. New York: The New York Academy of Medicine; 2004.

Cite this article as :

Nareshkumar Mustary, Komal Nagarkar, Kajal Musale, Rutuja Kale, Pratiksha Parekar, "Disaster Management and Detection System", International Journal of Scientific Research in Science, Engineering and Technology (IJSRSET), Online ISSN : 2394-4099, Print ISSN : 2395-1990, Volume 8 Issue 3, pp. 76-80, May-June 2021. Available at doi : https://doi.org/10.32628/IJSRSET218212
Journal URL : https://ijsrset.com/IJSRSET218212