International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 05 Issue: 03 | Mar-2018 www.irjet.net p-ISSN: 2395-0072

EMERGENCY NAVIGATION SYSTEM USING MOBILE COMPUTING

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Abstract – *The main aim of this project is to when emergency happen navigation services that guide people to exits while keeping them away from emergencies are critical situation. Benefiting from recent advances in wireless sensor network (WSN) technologies, large-scale deployment of WSNs has become viable and affordable which ever used to serve as an increasingly popular platform to engage continuous environment monitoring. Recently there is a trend to incorporate WSNs into emergency navigation systems, aiming at providing early and automatic detection of potential dangers, such as geologic disasters, wildfire hazards and oil/gas leakages, and navigating people to safe exits while keeping them away from emergencies. This work considers such a WSN- emergencies and provides necessary guidance information to the mobile users, so that the users can be eventually guided to safe exits through ubiquitous interactions with sensors and assisted emergency navigation problem by utilizing the sensor network infrastructure as a cyber-physical system.*

Key Words: *Wireless Sensor Network*

1. INTRODUCTION

Benefiting from recent advances in wireless sensor network (WSN) technologies, large-scale deployment of WSNs has become viable and affordable which ever used to serve as an increasingly popular platform to engage continuous environment monitoring. Recently there is a trend to incorporate WSNs into emergency navigation systems, aiming at providing early and automatic detection of potential dangers, such as geologic disasters, wildfire hazards and oil/gas leakages, and navigating people to safe exits while keeping them away from emergencies. This work considers such a WSN-assisted emergency navigation problem by utilizing the sensor network infrastructure as a cyber-physical system. In this mobile scenario, people are equipped with communicating devices like mobile phones that can talk to the sensors. When emergencies happen and mobile users are trapped in the field, the sensor network explores the emergencies and provides necessary guidance information to the mobile users, so that the users can be eventually guided to safe exits through ubiquitous interactions with sensors.

1.1EXSISTING SYSTEM

When emergency occurs existing system only focus on finding the safest path for each person, but they are not considering the congestion during the sensor trigger time. It is one of the major issues in this system. The alternative path will not be shown on the same time while ignoring a roundabout way temporarily replacing part of a route.

1.2 PROBLEM STATEMENT

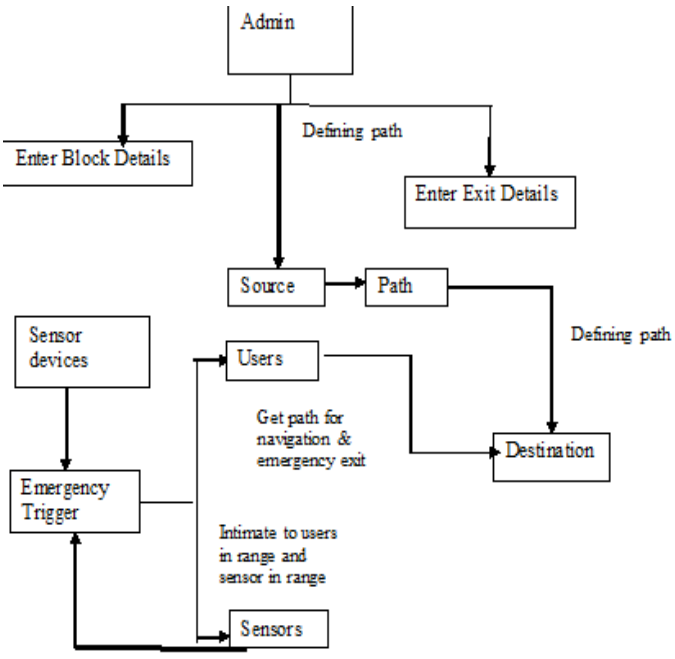
In countries like India, there is lack of emergency navigation application, since the population is more.

The purpose of this project is to detect and monitor emergency situation and provide proper guidance to the user y providing nearest and safest exit point.

2. ARCHITECTURE DESIGN

System consist of admin who defines block detail, exit details and defines who enter the block path between

Fig -1: architecture diagram



Source and destination. The user has to create an account in order to get information from the admin. In the case of emergency the sensor device communicates with the emergency trigger and message is sent to admin. The admin provides the block details, exit

Details and the path between source and destination.

2.1 PROPOSED SYSTEM

In this Mobile Environment, the users are equipped with PDAs or smart phones that can talk with the Sensors easily. When emergency occurs, the WSN provides necessary information to users, so that guided to move out of a hazardous area through interaction with sensors. Wireless network sensor combined with a navigation algorithm could help safely guide for the people to get safe exit with avoiding hazardous area. We propose a plain navigation algorithm for emergency situation. SEND leverages the idea of level set method to track the evolution of the exit and the boundary of the hazardous area, so that people nearby the hazardous area achieve a mild congestion at the cost of a slight detour, while people distant from the danger avoid unnecessary detours. Firstly, the navigation of human beings seeks for a safe-critical path, other than packet loss or energy efficiency which is the first priority as in packet routing. Secondly, human navigation consumes much more time than traditional packet routing process, due to the limited movement speed of people. And which are critical for a fast evacuation, as they mainly focus on finding the shortest/safest path for each person, while other sub-optimal (yet safe) paths are left unused throughout most of the evacuation process.

The proposed system has four modules

1. Admin Process
2. Network Formation
3. Destination Navigation
4. Emergency Navigation

1. Admin Process:

The admin should have the prior knowledge about the environment. The admin will preprocess the whole environment for the complete navigation for the users by adding the block details (Peter England, theater, so on) and the exit, the brief description about the block and exit. And admin navigate the user by preprocessing the path for source to the destination that the user request.

2. Network Formation:

In Network formation we construct the whole environment, where the environment actors are users, sensors, and the centralized server. Where the sensors are scattered among the environment that sense the environment condition. And the users are with their handheld device that gets connected by the any of the sensor in the environment based on the coverage of the sensor.

3. Destination Navigation:

If the user is in need to get the particular path from the source to the destination. The user request for the path with the destination that user should reach. The centralized server checks with the user's source and destination and find the path for the respective travel. And navigate the user in the map level.

4. Emergency Navigation:

The sensors sense the environmental conditions continuously, if the sensor sense the abnormal values the sensor intimates to the users that connected with the sensor and intimates with the nearby sensors. And the all sensor does the same. And the emergency passes to the whole environment. And the user handheld device gets the navigation from the server that exit as the destination. And the map level navigation has been given to the user's handheld devices.

2.2 HARDWARE PART

The hard disk is of size 500GB and above. Here it requires I3 and above processor and the RAM is of 4GB and above. This application uses android as its platform, hence android mobile of version honeycomb and above is required.

Fig -2 I3 Processor

2.3 SOFTWARE PART

This application is designed and developed so as to provide the users with all necessary information regarding emergency situations from the source will go to destination along with their path and exact locations. The user side module and admin side module is implemented using windows 7 and above as operating system, JDK 1.7, Tomcat 6.0 and MySQL5.0.

2.4 TECHNOLOGIES USED

Here, we use J2EE (JSP, SERVELET), JAVA is used as computer programming language, JavaFX, Networking is used as communication which allows nodes to share resources and the platform is Android.

3. LITERATURE SURVEY

In the case of implementation or in the case of system design all purposed methods are unique. When the Emergency Navigation system is installed one your mobile phone the user need to create an account to get the details during the time of emergency. Where the admin provides the nearest

Exit point on the users mobile phone [1]. Liang He proposed Evaluating services disciplines for mobile elements in wireless adhoc sensor network. The data collection latency may be large due to low travel speed of mobile. [2]. Huiji Lin proposed Compostable information gradients in wireless sensor networks. Environmental changes occur at a slower rate than the time. Demand a radically different system design for information discovery and routing. [3]. Xiang-Yang proposed Efficient data aggregation in multi-hop wireless sensor networks under physical interference model. One practical issue is WSN as dates are generated everywhere i.e. Temperature repotting so on.. [4]. Stephen A .Jarvis proposed Connectivity-Guaranteed and Obstacle-Adaptive Deployment Schemes for mobile sensor networks. Communication range of a sensor may not be large enough to cover all those neighbors. The schemes do not need any knowledge of the field layout [5]. Kiebn Liu proposed Does wireless sensor network scale? A measurement study on GreenOrbs put up to build sensor system is still unclear. [6]. Tamil Selvi proposed Optimal path selection for mobile robot navigation using genetic algorithm. Search can be very complicated. Very large computing power. [7]. Jens.B. Schmitt found Boosting sensor network calculus by thoroughly bounding cross traffic Although much effort has to been invested in the latter on , we show typically it only consumes around 205 of computational crime. [8]. Farid Lalem proposed Detection of failed boundary nodes in wireless sensor network. Failures are unavoidable in WSN due to hardware constrain. Failure sensitive and requires less energy consumption [9]. Xufei Mao proposed City See: Urban CO2 Monitoring with Sensor. The carbon sequesation ,global warming and emission has a major issues over the specialist over the world Sensor collection , data collection ,data processing and network diagnosis management are the major issues [10]. Markus Kuderer proposed Online generation of Homologically distinct navigation paths. It is difficult to find out the global optimal solution due to high dimensionality of search space specially methods for online application There for They rely on lower dimensional space such ad 2D.

4. ADVANTAGES

The proposed system looks forward with various advantages:

- Need to deliver relevant information with very low latency,
- A real-time navigation system in such a dynamic environment is quite useful
- minimizing sensing overlap and improving the overall network coverage
- Path planning, collision avoidance and obstacle avoidance are achieved in both static and dynamic environment
- Length of the algorithm chromosomes (number of genomes) is dynamic.
- achieve connectivity for a network with arbitrary sensor communication/ sensing ranges or node densities

5. CONCLUSION

To assist people in escaping from a hazardous (dangerous area) region quickly when an emergency occurs with guaranteed safety, while avoiding excessive congestions and unnecessary detours has been implemented using the environment map navigation

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