Consign Region Coverage By Mobile Sensor Node Using Hexagonal Scheme

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Abstract - Mobile sensor nodes are useful in many entourages because they can move to escalation the coverage area. After a sensor node overthrow formulates a coverage hole, a mobile sensor node is shoved to cover the hole in a timely and energy efficacious way. In this accession we are using contingent uniform disposition of N mobile sensor nodes. Such that each node has equal prospect of falling at any location in ROI (Center of hexagon). A rectangular ROI prorated in regular hexagon in tessellation patterns. Mobile sensor nodes are haphazardly planted in the ROI. Coverage should be incorrigible. Intendment of this work is using Mobile sensor nodes with peerless travelling distance and less coverage overlap.

Keywords - Mobile Sensor, Hexagonal Scheme, ROI, Coverage.

I. INTRODUCTION

Mobile sensor nodes have reserved lavish immersion since network performance can be intensely rehabilitated by using just a scant number of mobile sensor nodes. Mobile sensor nodes have performance adequacy to collaboratively reinstall the purlieus. Broadcast in this accession becomes very subsidiary in situations where static nodes organization mechanisms fail or are not realizable. Superlative induction of static sensor nodes might not be fortuitous in disaster immensity and urban toxic propinquities. Mobile sensor nodes might be better option and a significantly fewer number of nodes are required than their stalled pendants.

A particle is said to be k-covered if it falls into at least k sensor's sensing range. The term k can be interpolated as degree of transmission. The inclusive sensing broadcast of a sensor network is just the aggregation of the expanses covered by the entire sensor node.

Broadcast is usually interpreted as how well a sensor network will monitor a field of interest. It can be thought of as a measure of quality of service (QoS). Broadcast can be deliberated in different usage confide on the application, Depending on the sensing range an secluded node will be apt to sense a part of the sensing glebe. Degree of broadcast at a particular point in the sensing field can be related to the number of sensors whose sensing realm covers that point. It has been scrutinized and assumed that discrepant applications would require different degrees of broadcast in the sensing glebe. It may be low degree of broadcast; it may be demoniacally degree of broadcast. A network that has a high degree of broadcast will evidently be more resilient to node stalemates.

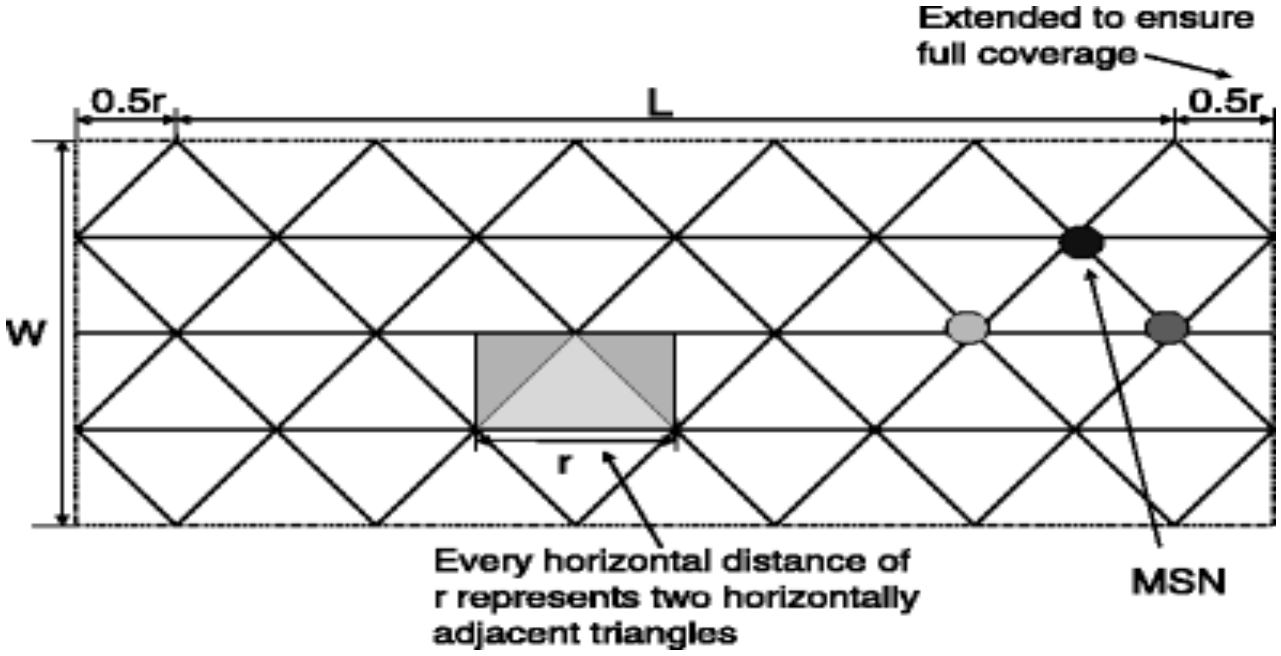

Figure : Segmentation of the field in Equilateral triangle

II. LITERATURE REVIEW

This work is perturbed with the sensor network is the broadcast problem. Typical nuisance of sensor nodes in a sensor network are to stockpile and transfuse the data. Monitoring desires much more energy. Sensor nodes are assembled with limited power source. In manifold cases it is not expedient to replace the power sources.

In triangulation based broadcast MSNs are used. MSNs are useful in disaster expanses and urban toxic vicinity in this expanses placement of static sensor nodes is not pragmatic. A triangulation based broadcast where group of three MSNs position themselves to form equilateral triangle and several mobile traversal algorithm are used. To the extent of cover a rectangular ROI, prorated it into equilateral triangles. This embodiment a lattice of equilateral triangles. Enormity under each triangle is covered by the three sensors which are implanted at the vertices of the equilateral triangle.

I. PROPOSED WORK

A rectangular ROI of length L and breadth B for the sake of convenience we consider the origin (0, 0) to be at the bottom left of ROI. X and Y axes originate from here. The ROI is divided in two regular hexagons of side R in tessellation patterns.

The distance between two center points of adjacent regular hexagon is √3R. There are N no. of hexagons arranged along the length L and M no. of rows arranged along the breadth of B.

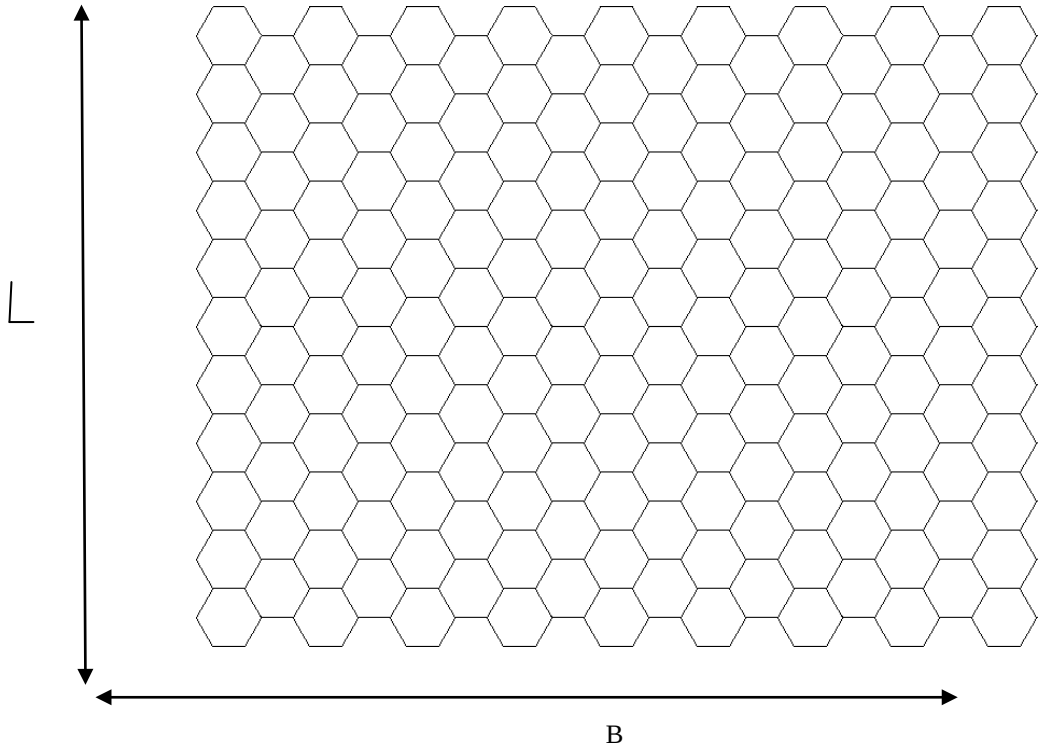

Fig 4.1 partition of ROI

Following mathematical relations can be established to find out the value of M and N.

Distance between two parallel sides of hexagon is √3R.

$$N = \frac{L}{R\sqrt{3}}$$

$$B = (M-1) * \frac{3R}{2} + 2R$$

Then

$$M = \frac{2B - R}{3R}$$

Where: L= length of ROI

B= Breadth of ROI

M= number of rows

N= number of regular hexagon in one row

R= side of regular hexagon

Therefore, Total no. of regular hexagons present in ROI after tessellation is M×N;

II. CONCLUSION

This accession is felicitous in expanses where manual organization of nodes is not indeterminate. By affecting the experiments using MSNs for ROI we have contemplated that mobile sensor nodes overlay the whole purlieus without any broadcast hole and MSNs travel the flawless distance without broadcast overlap. MSNs are disconnected and their travelling distances are minimized.

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