Design of Shrewd Underwater Routing Synergy using Porous Energy Shells

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Abstract
Underwater sensors link establishment and quality inspection challenges are blurt out during ubiquitous data monitoring. The energy utilization has a direct impact because all active devices are battery dependents and no charging or replacement actions could be made when cost- effective data packet delivery has been set as a benchmark. The hop link inspection and the selection of a Shrewd link through resurrecting link factor was a nothing short of bleak challenge which could only be made possible after going through meticulous research by developing a shrewd underwater routing synergy using extra porous energy shells (SURS-PES) which might never have conducted of before. After broadcasting packets the sensor node conducts a link inspection phase thereby, if any link is found to be less than or equal to 50% shaky; the destination receiving node puts in own residual energy status and return back to the source node which in result adds some unusable energy porous shell to strengthen the link from 50 to 90% at most and send it only to the targeted node and an unaltered data packet delivery is anticipated. Performance evaluation has been carried out using NS2 simulator and obtained results have been compared with DBR and EEDBR to observe the distinguish outcomes thereon results in vouches for the statement that has been made earlier for this research direction.

Full Text
Due to technical limitations, full-text HTML conversion of this manuscript could not be completed.

However, the manuscript can be downloaded and accessed as a PDF.

Tables

| Table 1 Types of link and threshold value |
|------------------------------------------|
| Metric type     | SNR  | LFI  | PRR     | Triangle |
| Shrewd link     | >30  | >106 | 1       | >145     |
| Pristine link   | 15-30| 102-106 | 0.75-1 | 80-145   |
| Fair link       | 5-15 | 80-102 | 0.35-0.75 | 30-80   |
| Uncouth link    | 0-5  | 0-80 | 0-0.35 | 0-30     |
| Parameter                          | Value                     |
|-----------------------------------|---------------------------|
| Deployment area                   | 1000 x 1000 x 900 m³     |
| Distance among sensor couplet     | 100 m                     |
| No. of nodes                      | [100 – 600]               |
| Communication range               | 250 m                     |
| Type of protocol                  | SMAC                      |
| Start energy                      | 100 J                     |
| Medium                            | Acoustic Waves            |
| Bandwidth capacity                | 10 Kbps                   |
| Packet generation rate            | 0.02 pkts/min             |
| Velocity                          | 1500 m/s                  |
| Node movement                     | 0 - 3 m/s                 |
| Energy consumption                | 2 w; 0.75 w; 8 mw         |
| Data packet volume                | 64 bytes                  |
| Data packet interval (Hello)      | 99 s                      |
| Packet creation time              | 15 s                      |
| No. of runs                       | 50                        |

Figures
Figure 1

Proposed (SURS-PES) methodology flow chart
Figure 2

Modular topology
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Link Grain determination
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Energy Diminution analysis