*Sensor Network Operat*

and  iii) SDDA employs a sleep protocol to coordinate the activation of sensing units of sensor nodes in such a wa circuits [20] accelerate the feasibility of the inexpensive sensor networks applications

from military networks (surveillance, intelligence) to environmental monitoring networks

lications

(climTj t3.36 0 Td (m)Tj 9.36 0 Td (Tj 3 8.64 0 Td (o)Tj 6.12 0 Td (r)Tj 3.96 0 00 Td (o)Tj 6.12 0 Td (r)Tj 3

fromm

selecting certain pixels from the actual image data. Cluste

Section 3 discusses the performance eva

has great potential to reduce the amount of data to be transmitted from sensor nodes to cluster-heads. The basic motivation behind differential data aggregation is that significant changes in sensor readings can occur only when a *critical* event (e.g., a fire event for sensor network monitoring temperature) happens in the env

## *2.1 Differential Data Aggregation*

environment in which the network is deploy

13. **endif**

14. Find the respective critical value for each current data sensed using

*interval* and *ht* [illegible]

30])  from 5 to 8 while keeping the second interval ([31-50])'s critical value as 3, same with the previous case.

- The data interval that contains the sensed temperature is found from the *interval* table. Then, from the interval value, cor and the 3.96 0 Td (e)Tj 5.28 0 Td ( )Tj Td (f)Tj 3.96 0or

communic]c]c

common neighboring area of four or less deployment grids. The global connectivity of the sensor network is ensured, if all of the deploym be from neighboring deployment grids, since global key rings are selected from key pools assigned to neighboring grids.

[redacted]

**Figure 2** Lo2

[redacted]

The proposed security algorithm concentrates on three main aspects of security namely, *Step 5*: Sen

wireless sensor nodes and using peer-t(a)Tj 4.68 0 .96 0 Td (-)Tj 3.96 0 Td (t)Tj 3.3

The sleep protocol is a distributed protocol in which sensor nodes cooperate w.36 0 Td(s)Tj 4.068 0 T

exchanges its buffer with active neigs

10

**Figure 7**: Blind spot effee

efficient than the conventiii

To assess the energy efficiency of SDDA, we wrote a simulator in C and used GloMoSim [9]. Our simulator is used in differential pattern generation and differential pattern comparison aspects of SDDA. GloMoSim is used to simulate the transmission of data and differential pattern codes from sensor nodes to cluster

**Figure 9**: Comparison of encryption algorithms using Strong-Arm SA-1100 profiling [19].

### 3.4.2 Cryptographic strength of the Security Protocol

In this subsection we will e

allow the attacker to complete a brute force attack on the mespo

The paper also introduces a novel key distribution algorithm implemented prior to the deployment of sensor nodes. Initially, each sensor node is assigned a number of encryption keys by taking advantage o Td (e)Tj 5.28 0 Td (n)Tj 6 0v (y)Tj 5.76 0 Td (s)Tj 0 Td ( )Tj 3 0 Td

[3] A.

[10] W