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# A Strategic Review of Energy Efficient Clustering Algorithms in Mobile Wireless Sensor Networks

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**Abstract -** Mobile Wireless Sensor Networks (MWSNs) is an emerging technology that senses the data through mobile sensor nodes. As they are mobile in nature they change their position from time to time in a sensing area. Energy efficiency is a major challenge in Mobile Wireless Sensor Networks as the node consumes energy during mobility, data transmission and data reception. Clustering is an energy efficient technique to reduce the energy consumption of the nodes. This paper explains about the energy efficient clustering algorithms in Mobile Wireless Sensor Networks that have been proposed earlier by the authors in different journals and further compares the energy consumption of the network based on time. This paper analyses the result based on existing energy efficient Clustering algorithms like Enhanced Energy Efficient Clustering Algorithm (EEECA), Grid based Energy Efficient Clustering Algorithm (GEECA) and Density based Mean Grid Energy Efficient Clustering Algorithm (DMGEECA) for Mobile Wireless Sensor Networks.

***Keywords –*** *MWSN, Clustering, Grid, Density, Mobility, Energy Efficiency.*

## 1. Introduction

Mobile Wireless Sensor Networks [1][2][3] is a network of tiny mobile sensor nodes deployed randomly in a significant area. Mobile sensor nodes consist of a microcontroller, various sensors (i.e., light, temperature, humidity, pressure, mobility, etc.), a radio transceiver, and that are powered by a batter. Some of the major applications of MWSNs are environmental monitoring, seismic monitoring, acoustic detection, health care applications, process monitoring, infrastructure protection, undersea navigation, smart spaces, inventory tracking and tactical military surveillance, etc. The mobile sensor nodes sense the data and send it to the Base Station which consumes energy. Energy efficiency is one of the main research issue in Mobile Wireless Sensor Networks. Clustering is an energy efficient technique to reduce the energy consumption of the nodes thereby increasing the lifetime of the network.

This paper has been orchestrated as follows. Section I gives introduction on Mobile Wireless Sensor Networks. Section II describes the Clustering technique. Section III describes literature study on relevant energy efficient clustering algorithms. Section IV explores the performance analysis of clustering algorithms. Section V specifies the conclusion.

## 2. Clustering in MWSN

Clustering [4][5][6] is an energy efficient technique where the sensor nodes are divided into non overlapping groups. Each group is governed by a node referred to as Cluster Head (CH) with all the nodes within a cluster referred to as Cluster Members (CM). Cluster Head (CH) collects the data from all the member nodes and aggregates the data collected from the member nodes and sends it to the Base Station. Clustering [7] is used to reduce the energy consumption among the sensor nodes thereby increasing the lifetime of the nodes.

In Mobile Wireless Sensor Networks different energy efficient clustering algorithms have been proposed. The ultimate aim of all these proposals is to reduce the energy consumption and increasing the network lifetime.

## 3. Related Work

### EEECA: Enhanced Energy Efficient Clustering Algorithm

EEECA [8] is an Energy Efficient Clustering Algorithm which minimizes the energy consumption and thereby maximize the lifetime of the Mobile Wireless Sensor Networks. EEECA algorithm is designed for the nodes which change the mobility with time. The algorithm checks for node existence by sending a Hello message to the nodes. The Degree of the node is calculated based on one hop neighbours within a transmission range. The Distance between the node and the Base Station, the Mobility of the node and the Energy consumed in both transmission and reception of data are found. Based on the Degree, Energy consumption, Distance and the Mobility a weight is calculated for each node. The node with minimum weight is selected as Cluster Head. Once the Cluster Head (CH) is selected the remaining nodes sends a Request to the CH to become a Member to form the Cluster. The nodes which receive an Acceptance message from CH becomes the Cluster Member to form a Cluster. The weight of each node is calculated and the node with minimum weight is considered as the Cluster Head. As the Cluster is formed the Cluster Members sends data to the Cluster Head which are aggregated and forwarded to the Base Station. The Overall Energy Consumption of the Cluster is reduced when compared with EECA-M2 Algorithm.

**EEECA Algorithm**

Step 1 : Check for node existence
Step 2 : If Node exists
Node - > Send Hello message to the 1 hop neighbors;
Node - > Find the Deg( ) by the Node;
Node - > Find the Distance to the Base Station (Dis_BS);
Node - > Find the Energy Consumed (Etrans) to transmit k bits to BS;
Node - > Find the Energy Consumed (Erec) to receive ACK from BS;
Node - > Find the total Energy Consumption (Econ) from Etrans and Erec;
Node - > Find the Mobility (Mob) of the Node
Node - > Calculate the Weight based on Deg(), Dis_BS(), Econ and Mob;
Else
Node - > Node doesn't exist;
Exit
Step 4 : CH - > Node with Minimum Weight.
Step 5 : Node - > Sends Request to the CH
Step 6 : CH - > Send ACC to the Nodes to become CM
Step 7 : CM - > Join the CH to form Cluster
Step 8 : CH -> Receive k bits from CMs
Step 9 : CH - > Aggregate the received data
Step 10: CH - > Send the data to the BS
Step 11: Find the overall Energy Consumption of the Cluster.
Step 12 : Find the Lifetime of the Network.
Step 13 : Exit

### GEECA: Grid Based Energy Efficient Clustering Algorithm

GEECA [9] is an Energy Efficient Clustering Algorithm which minimizes the energy consumption and thereby maximize the lifetime for the Mobile Wireless Sensor Networks. GEECA algorithm partitions the sensing field into uniform grids with mobile sensor nodes which change the mobility with time. The position of each node is found and categorized under the respective grids. The algorithm checks the existence of the node by sending a Hello Message in each Grid. The algorithm calculates the weight of a node based on four metrics, namely the Degree, Energy consumption, Distance between the node and the Base Station and the Mobility of a node. The node with minimum weight is selected as the Cluster Head in each Grid. The other nodes sends a request to the respective Cluster Head and the nodes become Cluster Members as it receives the Acknowledgement from the Cluster Head. Clusters are formed in each Grids. As the nodes are in mobility, the nodes move from one Grid to the other, thereby joining the new Cluster. New Cluster Heads are elected whenever the Cluster Head leaves the Grid. The algorithm shows a better performance when compared with EEECA with reduced Energy Consumption in Clusters. The Energy Consumed during mobility is also less compared to EEECA.

**GEECA Algorithm**

Step 1 : Partition the area into uniform Grid areas
Step 2 : Check the position of the Node Node_Pos( )
Step 3 : Based on the Node_Pos( ) categorize into the specific Grid.
Step 4 : Check for node existence in each Grid
Step 5 : If Node exists in Grid
Node - > Find 1 hop neighbors;
Node - > Find the Deg( );
Node - > Checks the Distance to the Base Station Dis_BS( ) ;
Node - > Find the total Energy Consumption Econ( ) from Etrans and Erec ;
Node - > Find the Mobility Mob() of the Node;

```
            Node - > Calculate the Weight based on
                    Deg(), Dis_BS(),Econ and Mob( );
        Else
            Node - >Node doesn't exist;
        Exit
        End If
Step 6 : For each Grid
            CH - > Node with Minimum Weight;
            Node - > Sends Request to the CH;
            CH - > Send ACC to the Nodes to become CM;
            CM - > Join the CH to form Cluster;
            CH -> Receive k bits from CMs;
            CH - > Aggregate the received data;
            CH - > Send the data to the BS;
         End For
Step 7 : Check the Node_Pos( ) of each node
Step 8 : If CM leaves Grid
            CH - > Rejects the Membership of the CM;
            CM - > Requests the CH in the newly entered
                   Grid;
            CH - > Accepts the Request by sending ACC
                   to become CM;
            CM - > Joins the CH to form Cluster;
        Else
            CM - > Requests the CH in the Grid;
            CH - > Accepts the Request by sending ACC
                   to become CM;
            CM - > Joins the CH to form Cluster;
        End If
Step 10 : Find the Mobility of the CH and the CMs
Step 11 : Find the Average Mobility of the Cluster
Step 12 : Find the overall Energy Consumption of the
          Cluster
Step 13 : Find the Lifetime of the Network
Step 14 : Exit
```

## DMGEECA: Density Based Mean Grid Energy Efficient Clustering Algorithm

DMGEECA[10] is an Energy Efficient Clustering Algorithm for reducing the overall Energy Consumption to increase the Network Lifetime. DMGEECA is based on Density of nodes in the Grids. The Density of the nodes in each Grid is compared with Threshold Density. The Mean Distance between the nodes and the Base Station is found to partition the Gird again into equal areas. Weightage of each node is found based on Degree, Distance, Mobility and Energy of the node. The node with minimum weight is selected as Cluster Head. The nodes send a request to the Cluster Head and becomes Cluster Members after receiving the Acknowledgement from the Cluster Head. Clusters are formed in each Grids. The number of Clusters are increased in the Grids with more Density. The overall Energy Consumption of DMGEECA is reduced compared to GEECA. The Energy Consumption in some the Grids are reduced and remain the same in some Grids as in GEECA.

**DMGEECA Algorithm**

```
Step 1 : Check for node existence in each Grid
Step 2 : If Node exists in Grid
            Node - > Find 1 hop neighbors;
            Node - > Find the Deg( );
            Node - > Checks the Distance to the Base
                     Station Dis_BS( ) ;
            Node - > Find the total Energy Consumption
                     Econ( ) from Etrans and Erec ;
            Node - > Find the Mobility Mob() of the
                     Node;
            Node - > Calculate the Weight based on
                     Deg(), Dis_BS(),Econ and Mob( );
         End if
Step 3 : Check the position of the Node Node_Pos( )
Step 4 : Based on the Node_Pos( ) categorize into the
         specific Grid.
Step 5 :  Check the density of the nodes in each Grid
Step 6 : For each Grid
          If the Density_Nodes  > Max_Density
            Find the mean distance Mean_Dis ( ) of the
            nodes in the Grid
            Group the nodes with
            Node _ Dis_BS < Mean_Dis( )
             CH - > Node with Minimum Weight;
             CH - > Form a Cluster with CM;
             CH - > Receives data, aggregates and sends
                    it to BS;
          Else
             CH - > Node with Minimum Weight;
             CH - > Form a Cluster with CM;
             CH - > Receives data, aggregates and sends
                    it to BS;
          End If
`         End For
Step 7 : Check the Node_Pos( ) of each node
Step 8 :  If CM leaves Grid
             CH - > Rejects the Membership of the CM;
             CM - > Requests the CH in the newly
                    entered Grid;
             CH - > Accepts the Request by sending
                    ACC to become CM;
             CM - > Joins the CH to form Cluster;
          Else
             CM - > Requests the CH in the current Grid;
             CH - > Accepts the Request by sending
                    ACC to become CM;
             CM - > Joins the CH to form Cluster;
```

End If
Step 9 : Find the Mobility of the CH and the CMs
Step 10 : Find the Average Mobility of the Cluster
Step 11 : Find the overall Energy Consumption of the Cluster
Step 12 : Find the Lifetime of the entire Network
Step 13 : Exit

## 4. Performance Analysis of Clustering Algorithms

The performance of the Energy Efficient Clustering Algorithms are analyzed. The Overall Energy Consumption of the Algorithms are analyzed along with the Energy Consumption during Mobility. The performance of the various algorithms are analyzed in Matlab 7.0. The overall Energy Consumption of all the Clusters and the Energy Consumption based on the Mobility of the Nodes are also analyzed.

Table 1 shows the overall Energy Consumption of the Clusters during 10 Sec, 20 Sec and 30 Sec at Grid 1.

Table 1 : Energy Consumption Vs Time at Grid 1

| *Time (Sec)* | *Energy (Joules)* | | |
|---|---|---|---|
| | *EEECA* | *GEECA* | *DMGEECA* |
| *10* | 0.001073105 | 0.000711333 | 0.000489 |
| *20* | 0.001436611 | 0.00064505 | 0.00064505 |
| *30* | 0.001682869 | 0.00049025 | 0.00049025 |

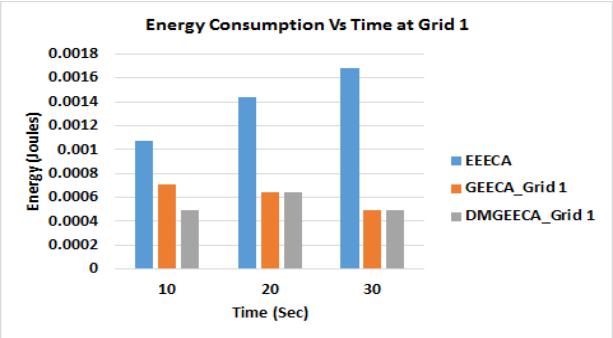


Fig. 1 : Energy Consumption Vs Time at Grid 1

Fig. 1 shows that the Energy Consumption of the Clusters in Grid 1 is more reduced at 10 Sec in DMGEECA algorithm than in EEECA or GEECA Algorithm. The Energy Consumption of Clusters is reduced in GEECA when compared to EEECA and remains the same as the density of nodes in Grid 1 is less at 20 Sec and 30 Sec.

Table 2 represents the Energy Consumption of Clusters in during 10 Sec, 20 Sec and 30 Sec at Grid 2.

Table 2 : Energy Consumption Vs Time at Grid 2

| *Time (Sec)* | *Energy (Joules)* | | |
|---|---|---|---|
| | *EEECA* | *GEECA* | *DMGEECA* |
| *10* | 0.001073105 | 0.00089207 | 0.000770804 |
| *20* | 0.001436611 | 0.00088414 | 0.000602139 |
| *30* | 0.001682869 | 0.0007945 | 0.0007945 |

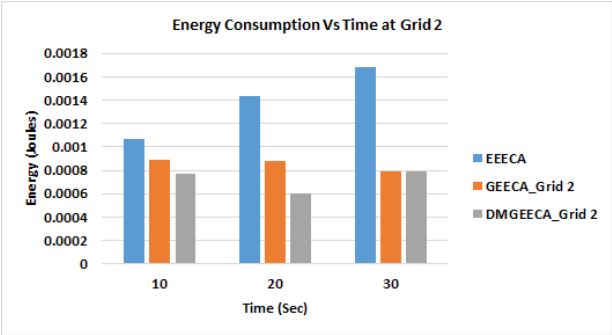


Fig. 2 : Energy Consumption Vs Time at Grid 2

Fig. 2 represents that the DMGEECA Algorithm shows reduced Energy Consumption than in EEECA and GEECA Algorithms at 10 Sec, 20 Sec and 30 Sec. The Energy Consumption is more reduced in DMGEECA Algorithm as the number of Clusters are increased based on the Density of nodes in the Grid.

Table 3 shows the Energy Consumption of Clusters during 10 Sec, 20 Sec and 30 Sec at Grid 3.

Table 3 : Energy Consumption Vs Time at Grid 3

| *Time (Sec)* | *Energy(Joules)* | | |
|---|---|---|---|
| | *EEECA* | *GEECA* | *DMGEECA* |
| *10* | 0.001073105 | 0.00073558 | 0.000722481 |
| *20* | 0.001436611 | 0.00083135 | 0.000572198 |
| *30* | 0.001682869 | 0.00076567 | 0.000544152 |

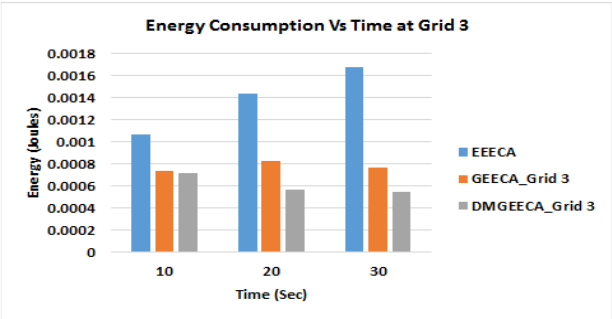


Fig. 3 : Energy Consumption Vs Time at Grid 3

Fig. 3 represents that the DMGEECA Algorithm shows reduced Energy Consumption than in EEECA and GEECA Algorithms at 10 Sec, 20 Sec and 30 Sec. The Energy Consumption is more reduced in DMGEECA Algorithm as the number of Clusters are increased based on the Density of nodes in the Grid.

Table 4 represents the Energy Consumption of Clusters in during 10 Sec, 20 Sec and 30 Sec at Grid 4.

Table 4 : Energy Consumption Vs Time at Grid 4

| *Time (Sec)* | *Energy(Joules)* | | |
|---|---|---|---|
| | *EEECA* | *GEECA* | *DMGEECA* |
| *10* | 0.001073105 | 0.000980333 | 0.00049496 |
| *20* | 0.001436611 | 0.00112564 | 0.00074146 |
| *30* | 0.001682869 | 0.000881 | 0.000881 |

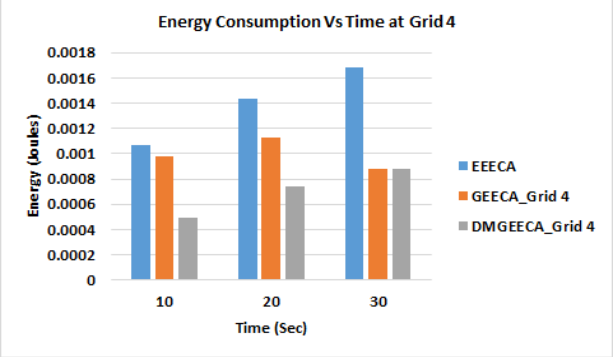


Fig. 4 : Energy Consumption Vs Time at Grid 4

Fig. 4 represents that the DMGEECA Algorithm shows reduced Energy Consumption than in EEECA and GEECA Algorithms at 10 Sec and 20 Sec. The Energy Consumption is more reduced in DMGEECA Algorithm as the number of Clusters are increased based on the Density of nodes in the Grid. The Energy Consumption is reduced in GEECA when compared to EEECA and remains the same in DMGEECA at 30 Sec as the density of nodes is less.

Table 5 shows the overall Energy Consumption of the Clusters during 10 Sec, 20 Sec and 30 Sec

Table 5 : Overall Energy Consumption Vs Time

| *Time (Sec)* | *Energy(Joules)* | | |
|---|---|---|---|
| | *EEECA* | *GEECA* | *DMGEECA* |
| *10* | 0.001073105 | 0.000829829 | 0.000619311 |
| *20* | 0.001436611 | 0.000871545 | 0.000643572 |
| *30* | 0.001682869 | 0.000732855 | 0.000677476 |

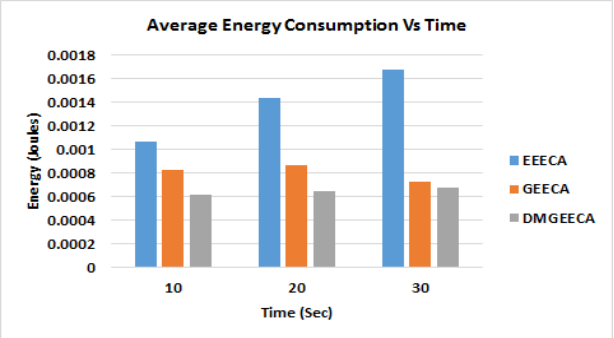


Fig. 5 : Average Energy Consumption Vs Time

Fig. 5 reveals that DMGEECA Algorithm performs better than EEECA and GEECA Algorithms with reduced Average Energy Consumption at 10 Sec, 20 Sec and 30 Sec.

Table 6 represents the Energy Consumption of the nodes during Average Mobility at Grid 1.

Table 6 : Mobility Vs Energy Consumption at Grid 1

| Mobility | Energy (Joules) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 10 Sec | | | 20 Sec | | | 30 Sec | | |
| | EEECA | GEECA | DMGEECA | EEECA | GEECA | DMGEECA | EEECA | GEECA | DMGEECA |
| 0.98995 | 0.000439 | 0.000439 | 0.000439 | 0.000439 | 0.000429 | 0.000429 | 0.000439 | 0.000439 | 0.000439 |
| 1.08423 | 0.000439 | 0.000439 | 0.000439 | 0.000439 | 0.000429 | 0.000429 | 0.000439 | 0.000439 | 0.000439 |
| 1.13137 | 0.000451 | 0.000439 | 0.000439 | 0.000451 | 0.000439 | 0.000439 | 0.000451 | 0.000451 | 0.000451 |
| 1.17851 | 0.000451 | 0.000439 | 0.000439 | 0.000451 | 0.000439 | 0.000439 | 0.000451 | 0.000451 | 0.000451 |
| 1.22565 | 0.000465 | 0.000439 | 0.000439 | 0.000465 | 0.000439 | 0.000439 | 0.000465 | 0.000451 | 0.000451 |

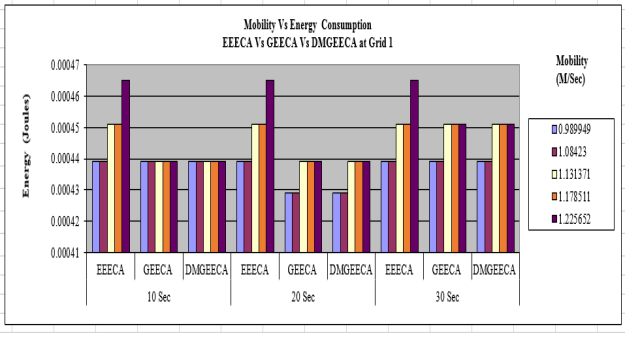


Fig. 6 : Mobility Vs Energy Consumption at Grid 1

Fig. 6 shows that the Energy Consumption of the nodes during Average Mobility is reduced in GEECA and DMGEECA than EEECA at 10 Sec, 20 Sec and 30 Sec. The Energy Consumption at 30 Sec is little increased in DMGEECA than at 10 Sec and 20 Sec due to the migration of nodes from various Girds to Grid 1 thereby increasing the density of nodes in Grid 1.

Table 7 represents the Energy Consumption of the nodes during Average Mobility at Grid 2.

Table 7 : Mobility Vs Energy Consumption at Grid 2

| Mobility | Energy (Joules) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 10 Sec | | | 20 Sec | | | 30 Sec | | |
| | EEECA | GEECA | DMGEECA | EEECA | GEECA | DMGEECA | EEECA | GEECA | DMGEECA |
| 0.989949 | 0.000439 | 0.000439 | 0.000439 | 0.000439 | 0.000439 | 0.000439 | 0.00044 | 0.000439 | 0.000439 |
| 1.08423 | 0.000439 | 0.000439 | 0.000439 | 0.000439 | 0.000439 | 0.000439 | 0.00044 | 0.000439 | 0.000439 |
| 1.131371 | 0.000451 | 0.000451 | 0.000451 | 0.000451 | 0.000439 | 0.000439 | 0.00045 | 0.000439 | 0.000439 |
| 1.178511 | 0.000451 | 0.000451 | 0.000451 | 0.000451 | 0.000439 | 0.000439 | 0.00045 | 0.000451 | 0.000451 |
| 1.225652 | 0.000465 | 0.000465 | 0.000465 | 0.000465 | 0.000439 | 0.000439 | 0.00047 | 0.000451 | 0.000451 |

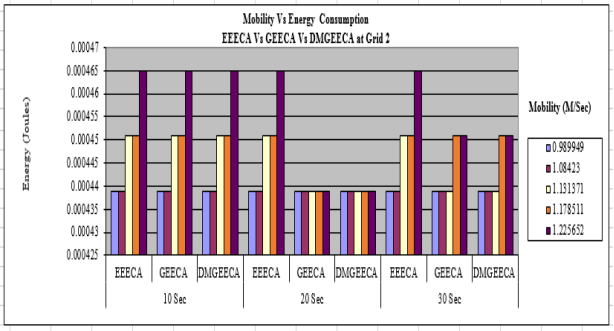


Fig. 7 : Mobility Vs Energy Consumption at Grid 2

Fig. 7 reveals that the Energy Consumption of the nodes at 10 Sec is the same in EEECA, GEECA and DMGEECA. The Energy Consumption at 20 Sec is fairly reduced in GEECA and DMGEECA compared to EEECA. But at 30 Sec the Energy Consumption of the nodes is a little increased in GEECA and DMGEECA due to the migration of nodes from various Grids to Grid 2.
Table 8 represents the Energy Consumption of the nodes during Average Mobility at Grid 3.

Table 8 : Mobility Vs Energy Consumption at Grid 3

| Mobility | Energy (Joules) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 10 Sec | | | 20 Sec | | | 30 Sec | | |
| | EEECA | GEECA | DMGEECA | EEECA | GEECA | DMGEECA | EEECA | GEECA | DMGEECA |
| 0.989949 | 0.000439 | 0.000439 | 0.000439 | 0.000439 | 0.000429 | 0.000429 | 0.00044 | 0.000429 | 0.000429 |
| 1.08423 | 0.000439 | 0.000439 | 0.000439 | 0.000439 | 0.000439 | 0.000439 | 0.00044 | 0.000439 | 0.000439 |
| 1.131371 | 0.000451 | 0.000451 | 0.000451 | 0.000451 | 0.000439 | 0.000439 | 0.00045 | 0.000439 | 0.000439 |
| 1.178511 | 0.000451 | 0.000451 | 0.000451 | 0.000451 | 0.000451 | 0.000451 | 0.00045 | 0.000451 | 0.000451 |
| 1.225652 | 0.000465 | 0.000465 | 0.000465 | 0.000465 | 0.000451 | 0.000451 | 0.00047 | 0.000451 | 0.000451 |

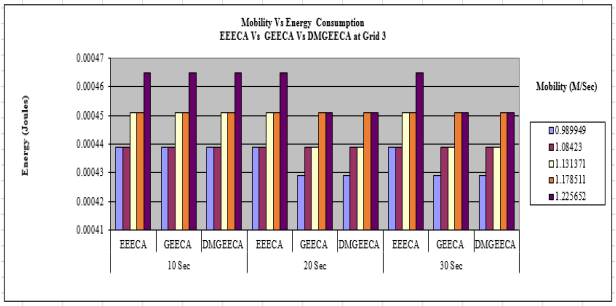


Fig. 8 : Mobility Vs Energy Consumption at Grid 3

Fig. 8 reveals that the Energy Consumption at 10 Sec is the same in EEECA, GEECA and DMGEECA Algorithms. The Energy Consumption at 20 Sec and 30 sec is fairly reduced in GEECA and DMGEECA compared to EEECA due to the migration of nodes from various Grids to Grid 3.
Table 9 represents the Energy Consumption of the nodes during Average Mobility at Grid 4

Table 9 : Mobility Vs Energy Consumption at Grid 4

| Mobility | Energy (Joules) at Grid 4 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 10 Sec | | | 20 Sec | | | 30 Sec | | |
| | EEECA | GEECA | DMGEECA | EEECA | GEECA | DMGEECA | EEECA | GEECA | DMGEECA |
| 0.989949 | 0.000439 | 0.000439 | 0.000439 | 0.000439 | 0.000429 | 0.000429 | 0.000439 | 0.000429 | 0.000429 |
| 1.08423 | 0.000439 | 0.000439 | 0.000439 | 0.000439 | 0.000429 | 0.000429 | 0.000439 | 0.000429 | 0.000429 |
| 1.131371 | 0.000451 | 0.000451 | 0.000451 | 0.000451 | 0.000439 | 0.000439 | 0.000451 | 0.000439 | 0.000439 |
| 1.178511 | 0.000451 | 0.000451 | 0.000451 | 0.000451 | 0.000439 | 0.000439 | 0.000451 | 0.000451 | 0.000451 |
| 1.225652 | 0.000465 | 0.000465 | 0.000465 | 0.000465 | 0.000439 | 0.000439 | 0.000465 | 0.000451 | 0.000451 |

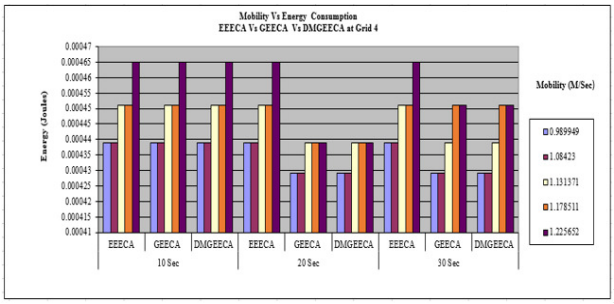


Fig. 9 : Mobility Vs Energy Consumption at Grid 4

Fig. 9 reveals that the Energy Consumption of the nodes at 10 Sec is the same in EEECA, GEECA and DMGEECA. The Energy Consumption at 20 Sec is reduced in GEECA and DMGEECA compared to EEECA. But at 30 Sec the Energy Consumption of the nodes is a little increased in GEECA and DMGEECA due to the migration of nodes from various Grids to Grid 4.

Table 10 represents the Average Energy Consumption during Mobility.

Table 10 : Mobility Vs Average Energy Consumption

| Mobility | Energy (Joules) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 10 Sec | | | 20 Sec | | | 30 Sec | | |
| | EEECA | GEECA | DMGEECA | EEECA | GEECA | DMGEECA | EEECA | GEECA | DMGEECA |
| 0.989949 | 0.000439 | 0.000439 | 0.000439 | 0.000439 | 0.000432 | 0.0004315 | 0.000439 | 0.000434 | 0.000434 |
| 1.08423 | 0.000439 | 0.000439 | 0.000439 | 0.000439 | 0.000434 | 0.000434 | 0.000439 | 0.000437 | 0.0004365 |
| 1.131371 | 0.000451 | 0.000448 | 0.000448 | 0.000451 | 0.000439 | 0.000439 | 0.000451 | 0.000442 | 0.000442 |
| 1.178511 | 0.000451 | 0.000448 | 0.000448 | 0.000451 | 0.000442 | 0.000442 | 0.000451 | 0.000451 | 0.000451 |
| 1.225652 | 0.000465 | 0.0004585 | 0.0004585 | 0.000465 | 0.000442 | 0.000442 | 0.000465 | 0.000451 | 0.000451 |

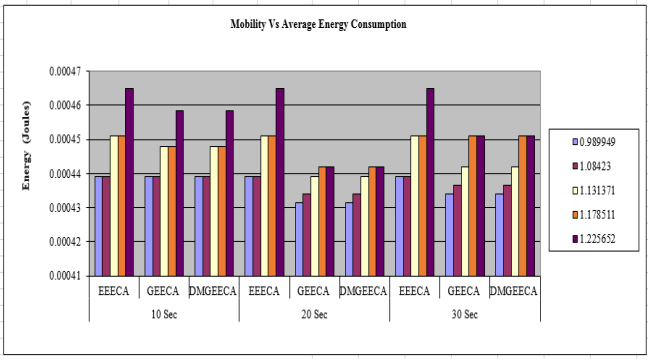


Fig. 10 : Mobility Vs Average Energy Consumption

Fig. 10 reveals that the Average Energy Consumption is reduced in GEECA and DMGEECA when compared to EEECA. This reduction and variation in Energy Consumption is due to the migration of nodes from one Grid to another.

## 5. Conclusion

Energy Efficiency is a major task in Mobile Wireless Sensor Networks which is resolved through the Clustering technique. The study deals with various Energy Efficient Clustering algorithms like EEECA, GEECA and DMGEECA. The ultimate purpose of those algorithms is to reduce the Energy Consumption and maximize the Network Lifetime. The results of the existing algorithms are confined to give better result. The performances of three algorithms EEECA, GEECA and DMGEECA discussed in this paper. Here Energy Efficient Clustering algorithm reduces the Energy Consumption of the nodes increases the lifetime of the nodes thereby increasing the lifetime of the Network. DMGEECA algorithm is more efficient in terms of Energy Consumption of the Clusters than EEECA and GEECA.

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