**Developer report**

**Title:** An Improved Energy-Efficient Clustering Protocol To Prolong The Lifetime Of The WSN-Based IOT.

**Title ID:** Here we need to mention Title ID of the Project.

**Objective of the Project**: The Improved energy-efficient clustering protocol (IEECP)is the proposed protocol reduces and balances the energy consumption of nodes by improving the clustering structure, IEECP is a good choice for networks that need to last a long time.

**Development Procedure:**

The main contribution by the proposed protocol is the pro-longing of the WSN-based IoT lifetime that depends on the node's battery, which extensively increases the applications' range of the WSN-based IoT. This major contribution can be achieved through the following tasks:1.an optimal number of clusters is determined for the overlapping balanced clusters.

2.Then, the balanced-static clusters are formed on the basis of a modified fuzzy C-means algorithm .Modified fuzzy C-means algorithm (M-FCM) that result from a combination of the FCM algorithm with a centralized mechanism, by combining this algorithm with a mechanism to reduce and balance the energy consumption of the sensor nodes.

3.Lastly, cluster heads (CHs) are selected in optimal locations with rotation of the CH function among members of the cluster based on a new CH selection-rotation algorithm by integrating a back-off timer mechanism for CH selection and rotation mechanism for CH rotation.4) Balancing the communication distance among the CHs in the network based on a new objective function for the back-off mechanism, and 5) Balancing the life of the selected CHs in the cluster based on a new dynamic threshold.

**Execution Procedure:**

The 100 Nodes are deployed randomly in the 100 \* 100 \*m^2 WSN sensing area size, The optimal number of clusters are determined, M-FCM Algorithm is applied and then CHSRA algorithm is also applied, Determination of No.of Alive Nodes and then energy consumption for nodes are determined. Iteration Rounds are for finding the current sensing values and to know the number of alive nodes i.e for particular no of rounds ,how many alive nodes are there ,and this rounds are taken for knowing how many packets were sent to Base Station, same applies for energy consumption for nodes,here we took 2500 rounds.

**Extension Idea:**

In future work, we aim to enhance the protocol by improving the FCM algorithm concerning the random initial selection. Moreover, we believe that improving the objective function of CH selection through the reliance on weighted energy-based distance for adjacent CHs is also crucially significant. We anticipate that the future clustering protocol can perform excellently when these limitations are taken into consideration.