observed as a fuzzy model which gave intuition into the real system and correspondingly delivered a technique to streamline the neural network. In the paper [3] projected a modest way for the assortment of inputs for the neuro-fuzzy model in classifying a nonlinear system. The paper [4] recommended additional technique for the selection of inputs of the neuro-fuzzy model fabricated for nonlinear system identification. The papers [5][6] exhibited the solicitation of the neuro-fuzzy method for the demonstrating of nonlinear systems. The paper [7] proposed a technique where the neural network is accustomed by exploiting the numerical data and moreover manual expert knowledge that is epitomized by the fuzzy if and then rules.

In the paper [8] projected a technique for the credentials of a vigorous classification with the assistance of a Takagi-Sugeno-Kang (TSK) brand fuzzy rule based model which also retains the learning capability of the neural network. In the paper [9] recommended a technique for the identification of a nonlinear system by a fast and stable neuro-fuzzy technique consuming error minimization. In the paper [10] offered a neuro-fuzzy method for the identification of a nonlinear system where in the initial stage the structure identification task is achieved and in the subsequent stage the parameter identification is accomplished. The authors in the [11] also projected a soft calculating based method for the identification of a nonlinear system.

In the paper [12] proposed a method of creating the fuzzy rules by a comprehensive dynamic fuzzy neural network which is erected on the ellipsoidal basis function. The authors in the paper [13] proposed a healthy adaptive fuzzy neural model for the detection of a specific group of multi input-multi output (MIMO) systems. This method has a fast-online learning competence where the fuzzy rules are produced or scrubbed robotically. In the paper [14] proposed a clustering method which is functioned to a combined input output space for the Neuro Fuzzy modeling of nonlinear systems. The experts in paper [15] employed the Neuro-Fuzzy approach for exhibiting the electricity demand in Victoria.

A. Adaptive Neuro Fuzzy Inference System (Anfis) Method for the Risk Severity Prediction of Malicious Nodes

A Neuro-Fuzzy technique called Adaptive Network based Fuzzy Inference System (ANFIS) has been practiced as a primary device in the current investigation. Adaptive Network based Fuzzy Inference System (ANFIS) is a Neuro Fuzzy technique where the mixture is completed between the fuzzy inference system and the neural network. In ANFIS the constraints can be assessed through the Sugeno and Tsukamoto fuzzy models are epitomized by the ANFIS architecture. Yet again, with negligible limitations the ANFIS model resembles the Radial Basis Function Network (RBFN) functionally. This ANFIS methodology encompasses of a hybrid structure of fuzzy logic and neural network technique. The fuzzy logic proceeds into account the fuzziness and vagueness of the structure that is being molded whereas the neural network stretches it logic of flexibility. By this hybrid method, at first a preliminary fuzzy model accompanied by its input variables are derived with the support of the instructions mined from the input output data of the system that is being modeled. Then, the neural network is cast-off to fine tune the guidelines of the initial fuzzy model to produce the final ANFIS model of the system.

```
Input: Optimal Dataset
    Begin
        A=selected attribute
        S=subset of operation
        K=next element from the available data
        S=item[i]
        For i=1 to n-1
                K=DataFIeld [i+1]
                S=S union K Select unique item of the
field
        End for
        Store S
    End
    Initialize Increment to 1
        Initialize Weight of Find Record to 0
        Initialize Qcnt to 1
        WHILE Increment < NI
                FOR each value FL
                        Index [FL] = rand() mod Nfl
                END FOR
    FOR each value IL
                        QStr = sql select statement where
each
                        Field[IL] = Index[IL] + ' ' +
RandAndOr();
                END FOR
                TotFR = ExecuteQuery(Qstr)
    IF TotFR is non zero THEN
                        Wht[Qcnt ] = TotR / TotFR
                        Add 1 to Qcnt
                ENDIF
        Add 1 to Increment
    ENDWHILE
    Save Wht
    Save Qstr
Output: Attack Severity: Stage 1 (Low), Stage 2 (Medium)
and Stage 3 (High)
```

VI. RESULTS AND DISCUSSION

ANFIS is employed with MATLAB R2018b for the risk severity prediction of malicious node detected in the preceding arrangement ANN method.

A. Reduced Dataset

Following table depicts the reduced dataset acquired by projected pre-processing for Intrusion Detection System Feature selection and Ant Gain Classification Framework [R].