**Feasibility Analysis (NP Completeness Analysis)**

The problem is to detect an intrusion in a Iot network. The main objective of our project is to provide a real-time solution for any possible intrusions.

In the proposed system, we are planning to use anomaly-based detection system. The anomaly-based intrusion detection system comes into effect when detecting newer attacks, that are not filtered by the firewall. Random Forest is an ensemble model of decision trees.

Training Complexity: O((n^2)pntrees)

Prediction Complexity: O(pntrees)

Calling n the number of training sample, p the number of features, ntrees the number of trees (for methods based on various trees),

where,

n= 21000 (Approx)

p = 17

ntress= 4

Hence O(pntrees) runs in polynomial time complexity.

The algorithm falls in P. Hence, the given problem is NP.

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