INTRUSION DETECTION IN A NETWORK USING DEEP LEARNING

Intrusion detection has an important role in information security as it identifies various attacks and suspicious activities in any network. For securing the network from these threats, an Intrusion Detection System (IDS) software is designed, that monitors the network traffic for such activities and issues alerts on discovering them. For this we use various machine learning classifiers namely Decision Tree, Support Vector Machine and Random Forest Classifier and also a deep learning approach using Recurrent Neural Networks (RNN-IDS) in which the hidden layer remembers information about a sequence. We study the performance of the proposed model in binary (normal or anomaly) and multiclass classification (Denial Of Service, User to Root, Probe and Root to Local) based on the benchmark NSL-KDD dataset. The results and accuracy of the proposed model are then compared and the best model is recognised. The final result proves that the Decision Tree model and the RNN-IDS model improve the speed and accuracy of intrusion detection systems. The future research of the project would be to reduce the training time using GPU acceleration, avoid exploding and vanishing gradients and study the bidirectional RNNs algorithm.

Dr. Veena Anand
(Project Mentor)

Submitted by -
Subhash Kshatri (16115083)
Shivendra Chauhan (16115075)
Shivansh Chandra Tripathi (16115904)