# GraphSAGE Node Classification Report


# Abdelrahman nabil anwar 2205115


## 1. Libraries

In this code, PyTorch and PyTorch Geometric are used to build and train a graph neural network.

---

## 2. Node Features

Each node has two features:

`[1, 0]` means the node is benign

`[0, 1]` means the node is malicious

There are 6 nodes in total.

---

## 3. Graph Connections

The graph is divided into two groups:

Nodes (0, 1, 2) are connected and represent benign nodes

Nodes (3, 4, 5) are connected and represent malicious nodes

There is one connection between node 2 and node 3 to show interaction between the two groups.

---

## 4. Labels

Each node is given a label:

`0` for benign

`1` for malicious

These labels are used during training.

## 5. Model

The GraphSAGE model has two layers.
The first layer aggregates features from neighboring nodes and applies ReLU.
The second layer produces the final classification output.

---

## 6. Training

The model is trained for 50 epochs using the Adam optimizer and negative log-likelihood loss.
During training, the model learns how to separate benign and malicious nodes.

---

## 7. Results

After training, the model predicts the class of each node.
The printed output shows the predicted labels for all nodes in the graph.