Chapter 5: Experimental Evaluation and Results

This chapter presents the experimental setup, evaluation strategy, performance metrics, and results obtained from the proposed fraud detection system based on graph embeddings and Graph Neural Networks (GNNs).

Evaluation Metrics and Formula

Accuracy = (TP + TN) / (TP + TN + FP + FN)
Precision = TP / (TP + FP)
Recall = TP / (TP + FN)
F1 Score = 2 * (Precision * Recall) / (Precision + Recall)

Model Performance Comparison

Model	Accuracy	Precision	Recall	F1 Score
Logistic Regression	78.6%	74.2%	69.5%	71.7%
Random Forest	84.3%	81.6%	77.4%	79.4%
Node2Vec + SVM	88.9%	86.3%	83.0%	84.6%
GCN-Based Model	92.7%	91.8%	89.4%	90.5%
GAT-Based Model	94.3%	93.5%	92.4%	92.9%