

LIST OF FIGURES

2.1	IoT Architecture Layer	7
2.2	Intrusion Detection System	9
2.3	Federated Learning	10
2.4	Flower Framework Logo	13
2.5	Deep Neural Network	14
3.1	Flowchart of Overall System	19
3.2	Flowchart of Exploratory Data Analysis	20
3.3	Comparison Percentage of Attack Classes between Original Dataset and 10% Dataset	22
3.4	Flowchart of Preprocessing IID Dataset	23
3.5	Flowchart of Preprocessing non-IID Dataset	24
3.6	Flowchart of Feature Selection using XGBoost Gain Value	26
3.7	Federated Learning System Model in This Thesis	29
4.1	Performance Comparison of FedAvg and FedProx ($\mu = 0.1$, $\mu = 1.0$, and $\mu = 2.0$) across 50 Rounds on the IID Dataset using All Features. (a) Loss, (b) Accuracy, (c) Precision, (d) Recall, (e) F1-Score	38
4.2	Performance Comparison of FedAvg and FedProx ($\mu = 0.1$, $\mu = 1.0$, and $\mu = 2.0$) across 50 Rounds on the IID Dataset using Feature Selection. (a) Loss, (b) Accuracy, (c) Precision, (d) Recall, (e) F1-Score	40
4.3	Performance Comparison of FedAvg and FedProx ($\mu = 0.1$, $\mu = 1.0$, and $\mu = 2.0$) across 50 Rounds on the non-IID Dataset using All Features. (a) Loss, (b) Accuracy, (c) Precision, (d) Recall, (e) F1-Score	43
4.4	Performance Comparison of FedAvg and FedProx ($\mu = 0.1$, $\mu = 1.0$, and $\mu = 2.0$) across 50 Rounds on the non-IID Dataset using Feature Selection. (a) Loss, (b) Accuracy, (c) Precision, (d) Recall, (e) F1-Score	45