LIST OF TABLES

Table 2. 1 Research Plan and Action Point 11
Table 3. 1 The Frequency Distribution of Attack Categories UNSW-NB15 24
Table 3. 2 The Frequency Distribution of Attack Categories CIC-IDS-2017 25
Table 3. 3 The Frequency Distribution of Attack Categories CIC-IDS-2018 25
Table 3. 4 Confusion Matrix 28
Table 3. 5 Results obtained from Confusion Matrices for Conventional ML 29
Table 3. 6 Three Cases of Imbalance Dataset 33
Table 4. 1 Performance Analysis of KNN UNSW-NB15 37
Table 4. 2 Performance Analysis of Logistic Regression UNSW-NB15 39
Table 4. 3 Performance Analysis of Decision Tree UNSW-NB15 40
Table 4. 4 Performance Analysis of Random Forest UNSW-NB15 41
Table 4. 5 Performance Analysis of XGB UNSW-NB15 42
Table 4. 6 Performance Analysis of LightGBM UNSW-NB15 43
Table 4. 7 Performance Analysis of AdaBoost UNSW-NB15 44
Table 4. 8 Performance Analysis of CatBoost UNSW-NB15 45
Table 4. 9 Performance Analysis of Extra Trees UNSW-NB15 46
Table 4. 10 Performance Analysis of All Model UNSW-NB15 47
Table 4. 11 Performance Analysis of KNN CIC-IDS-2017 51
Table 4. 12 Performance Analysis of Logistic Regression CIC-IDS-2017 52
Table 4. 13 Performance Analysis of Decision Tree CIC-IDS-2017 54
Table 4. 14 Performance Analysis of Random Forest CIC-IDS-2017 55
Table 4. 15 Performance Analysis of XGB CIC-IDS-2017 56
Table 4. 16 Performance Analysis of LightGBM CIC-IDS-2017 58
Table 4. 17 Performance Analysis of AdaBoost CIC-IDS-2017 59
Table 4. 18 Performance Analysis of CatBoost CIC-IDS-2017 60
Table 4. 19 Performance Analysis of Extra Trees CIC-IDS-2017 62
Table 4. 20 Performance Analysis of All Model CIC-IDS-2017 63
Table 4. 21 Performance Analysis of KNN CIC-IDS-2018 67
Table 4. 22 Performance Analysis of Logistic Regression CIC-IDS-2018 68
Table 4. 23 Performance Analysis of Decision Tree CIC-IDS-2018 69
Table 4. 24 Performance Analysis of Random Forest CIC-IDS-2018 70
Table 4. 25 Performance Analysis of XGB CIC-IDS-2018 71

Table 4. 26 Performance Analysis of LightGBM CIC-IDS-2018 72
Table 4. 27 Performance Analysis of AdaBoost CIC-IDS-2018 73
Table 4. 28 Performance Analysis of CatBoost CIC-IDS-2018 74
Table 4. 29 Performance Analysis of Extra Trees CIC-IDS-2018 75
Table 4. 30 Performance Analysis of All Model CIC-IDS-2018 76