In this study, the RF and DT models are implemented using scikit-learn tools. The CIS algorithm and ordinary search algorithm are implemented using MATLAB R2014a. Table 1 shows the optimized results for leakage detection models.

Table 1 Optimized results for leakage detection models

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Data | Model | Parameters | LPC | LSP | Time or frequency domain features |
| Raw  data | RF | *n\_estimators* | 1000 | 400 | 300 |
| *max\_features* | ‘auto’ | ‘auto’ | ‘auto’ |
| *criterion* | ‘entropy’ | ‘entropy’ | ‘entropy’ |
| DT | *max\_depth* | 50 | 50 | 50 |
| *min\_samples\_split* | 8 | 2 | 2 |
| *min\_samples\_leaf* | 2 | 1 | 1 |
| *criterion* | ‘entropy’ | ‘entropy’ | ‘entropy’ |
| -5 dB  data | RF | *n\_estimators* | 1000 | 300 | 300 |
| *max\_features* | ‘auto’ | ‘auto’ | ‘auto’ |
| *criterion* | ‘entropy’ | ‘entropy’ | ‘entropy’ |
| DT | *max\_depth* | 50 | 50 | 50 |
| *min\_samples\_split* | 2 | 2 | 8 |
| *min\_samples\_leaf* | 1 | 1 | 1 |
| *criterion* | ‘entropy’ | ‘entropy’ | ‘entropy’ |

The file named 'LPC.py' is related to LCP-based detection models using raw datasets.

The file named 'LPC\_noise.py' is related to LCP-based detection models using -5dB datasets. The file named 'LPC.py' is related to LPC-based detection models using raw datasets.

The file named 'LPC\_noise.py' is related to LPC-based detection models using -5dB datasets.

The file named 'Time or frequency features.py' is related to time or frequency domain features-based detection models using raw datasets.

The file named 'Time or frequency features\_noise.py' is related to time or frequency domain features-based detection models using -5dB datasets.

The file named 'OS\_algorithm.m' is related to the ordinary search algorithm in experiment 1.

The file named ' CIS\_algorithm.m' is related to the CIS algorithm in experiment 1.