APPENDICES

1. Two-bus mid-point compensated network first test system dataset

S.No	R (Ω/km)	X (H/km)	C (F/km)
Zero Sequence	0.3864	4.1264e-3	7.751e-9
Positive Sequence	0.01273	0.9337e-3	12.74e-9
Negative Sequence	0.01273	0.9337e-3	12.74e-9
Degree of line compensation	X_C (Ω)	C_S (μf)	
30 %	26.390	120.6	
35 %	30.788	103.4	
40 %	42.24	62.8	
45 %	39.585	80.41	

2. Simulated Modified WSCC 9-Bus Compensated Network Second Test System Dataset

Generators

Generator-1: 600 MVA, 22 kV, 50 Hz;

Generator-2: 465 MVA, 22 kV, 50 Hz;

Generator-3: 310 MVA, 22 kV, 50 Hz.

Transformers

Transformer1: 600 MVA, 22/400 kV, 50 Hz,Δ/Y;

Transformer2: 465 MVA, 22/400 kV, 50 Hz,Δ/Y;

Transformer3: 310 MVA, 22/400 kV, 50 Hz,Δ/Y.

Loads

Loading A= 300MW+j100Mvar.

Loading B= 200MW+j75Mvar.

Loading C= 150MW+j75Mvar

S.No	R (Ω/km)	X (H/km)	C (F/km)
Zero Sequence	0.3864	4.1264e-3	7.751e-9
Positive Sequence	0.01273	0.9337e-3	12.74e-9
Negative Sequence	0.01273	0.9337e-3	12.74e-9

Degree of line compensation	X_C (Ω)	C_S (μf)
30 %	26.390	120.6
35 %	30.788	103.4
40 %	42.24	62.8
45 %	39.585	80.41

3. Simulated Modified WSCC 9-Bus Compensated Network Second Test System Dataset

S.No	R (Ω/km)	X (H/km)	C (F/km)
Zero Sequence	0.3618	1.2277e-3	.3451 e-9
Positive Sequence	0.0185	0.0023e-3	.2279 e-9
Degree of line compensation	X_C (Ω)	C_S (μf)	
35 %	-	42.95	

4. Bagging Parameters

Bagging Model Parameters	
Method	Bagging
Number of Weak learner	Five weak learner
Learning rate	1.0
Type	Classification
Combine-weights	Weighted average
Class-Names	[1; 2; 3; 4; 5; 6; 7; 8; 9; 10]

5. KNN Parameters

KNN Model Parameters	
Num-Neighbors	1,2,3,4,5
NS-Method	Exhaustive
Distance	minkowski
Distance-Weight	Inverse
Break-Ties	Smallest
Class-Names	[1; 2; 3; 4; 5; 6; 7; 8; 9; 10]

6. DNN Parameters

DNN Parameters	
Hidden size	20
Encoder transfer function	"logsig"
Decoder transfer function	"purelin"
Data Division	"dividetrain"
Loss function	"mseparse"
Algorithm	"trainscg"
Max Epochs	1000