

LIST OF TABLES

Table 2-1 Pseudocode: Adaptive Pattern Substitution (PS) Method Embedding Phase	12
Table 2-2 Pseudocode: Adaptive Pattern Substitution (PS) Method Extraction Phase	14
Table 2-3 Pattern Substitution Table.....	18
Table 2-4 Implementation Extract Secret Message.....	23
Table 3-1 Pseudocode: Two-Phase Adaptive PFR Method Embedding	36
Table 3-2 Pseudocode: Two-Phase Adaptive PFR Method Embedding Phase 2 (Flipped).....	36
Table 3-3 Pseudocode: Two-Phase Adaptive PFR Method Extraction	37
Table 4-1 Secret Message String.....	62
Table 4-2 Example PSNR Result	67
Table 4-3 Experiment Result PSNR Embedded Image.....	68
Table 4-4 Experiment Result PSNR Recovered Image.....	69
Table 4-5 Example PSNR Result	70
Table 4-6 Experiment Result SSIM Embedded Image	70
Table 4-7 Experiment Result SSIM Recovered Image	71
Table 4-8 Example Payload Result	72
Table 4-9 Payload Adaptive Method.....	74
Table 4-10 Example Salt and Pepper Result	76
Table 4-11 Experiment Result Salt & Pepper PSNR Noisy (5%).....	81
Table 4-12 Experiment Result Salt & Pepper SSIM Noisy (5%)	81
Table 4-13 Experiment Result Salt & Pepper PSNR Noisy (10%).....	82
Table 4-14 Experiment Result Salt & Pepper SSIM Noisy (10%)	82
Table 4-15 Experiment Result Salt & Pepper PSNR Noisy (15%).....	83
Table 4-16 Experiment Result Salt & Pepper SSIM Noisy (15%)	84
Table 4-17 Experiment Result Salt & Pepper PSNR Noisy (20%).....	85
Table 4-18 Experiment Result Salt & Pepper SSIM Noisy (20%)	85
Table 4-19 Experiment Result Salt & Pepper PSNR Noisy (25%).....	86
Table 4-20 Experiment Result Salt & Pepper SSIM Noisy (25%)	87
Table 4-21 Experiment Result Salt & Pepper PSNR Noisy (30%).....	88
Table 4-22 Experiment Result Salt & Pepper SSIM Noisy (30%)	88

Table 4-23 Experiment Result Salt & Pepper PSNR Noisy (35%).....	89
Table 4-24 Experiment Result Salt & Pepper SSIM Noisy (35%)	89
Table 4-25 Experiment Result Salt & Pepper PSNR Noisy (40%).....	90
Table 4-26 Experiment Result Salt & Pepper SSIM Noisy (40%)	91
Table 4-27 Experiment Result Salt & Pepper PSNR Noisy (45%).....	92
Table 4-28 Experiment Result Salt & Pepper SSIM Noisy (45%)	92
Table 4-29 Experiment Result Salt & Pepper PSNR Noisy (50%).....	93
Table 4-30 Experiment Result Salt & Pepper SSIM Noisy (50%)	94
Table 4-31 Experiment Result PSNR Noisy(5%)	95
Table 4-32 Experiment Result SSIM Noisy(5%).....	95
Table 4-33 Experiment Result PSNR Noisy (10%)	96
Table 4-34 Experiment Result PSNR Noisy (10%)	96
Table 4-35 Experiment Result PSNR Noisy (15%)	98
Table 4-36 Experiment Result SSIM Noisy (15%).....	98
Table 4-37 Experiment Result PSNR Noisy (20%)	99
Table 4-38 Experiment Result SSIM Noisy 20%	99
Table 4-39 Experiment Result PSNR Noisy 25%.....	100
Table 4-40 Experiment Result SSIM Noisy 25%	101
Table 4-41 Experiment Result PSNR Noisy 30%.....	102
Table 4-42 Experiment Result PSNR ssim30%	102
Table 4-43 Experiment Result PSNR Noisy 35%.....	103
Table 4-44 Experiment Result SSIM Noisy 35%	104
Table 4-45 Experiment Result PSNR Noisy 40%.....	105
Table 4-46 Experiment Result SSIM Noisy 40%	105
Table 4-47 Experiment Result PSNR Noisy 45%.....	106
Table 4-48 Experiment Result SSIM Noisy 45%	106
Table 4-49 Experiment Result PSNR Noisy 50%.....	107
Table 4-50 Experiment Result SSIM Noisy 50%	107
Table 4-51 Example Scratch Result	108
Table 4-52 Experiment Result Scratch PSNR Embedded Image.....	109
Table 4-53 Experiment Result Scratch PSNR Recovered Image.....	110
Table 4-54 Experiment Result Scratch SSIM Embedded Image	111
Table 4-55 Experiment Result Scratch SSIM Recovered Image	112
Table 4-56 Experiment Result PSNR Embedded Image.....	115

Table 4-57 Experiment Result PSNR Recovered Image.....	116
Table 4-58 Example Payload Result	124
Table 4-59 Payload Adaptive Method.....	127
Table 4-60 Experiment Result Salt & Pepper PSNR Noisy (5%).....	131
Table 4-61 Experiment Result Salt & Pepper SSIM Noisy (5%)	131
Table 4-62 Experiment Result Salt & Pepper PSNR Noisy (10%).....	132
Table 4-63 Experiment Result Salt & Pepper SSIM Noisy (10%)	132
Table 4-64 Experiment Result Salt & Pepper PSNR Noisy (15%).....	134
Table 4-65 Experiment Result Salt & Pepper SSIM Noisy (15%)	134
Table 4-66 Experiment Result Salt & Pepper PSNR Noisy (20%).....	135
Table 4-67 Experiment Result Salt & Pepper SSIM Noisy (20%)	136
Table 4-68 Experiment Result Salt & Pepper PSNR Noisy (25%).....	137
Table 4-69 Experiment Result Salt & Pepper SSIM Noisy (25%)	137
Table 4-70 Experiment Result Salt & Pepper PSNR Noisy (30%).....	138
Table 4-71 Experiment Result Salt & Pepper SSIM Noisy (30%)	138
Table 4-72 Experiment Result Salt & Pepper PSNR Noisy (35%).....	139
Table 4-73 Experiment Result Salt & Pepper SSIM Noisy (35%)	140
Table 4-74 Experiment Result Salt & Pepper PSNR Noisy (40%).....	141
Table 4-75 Experiment Result Salt & Pepper SSIM Noisy (40%)	141
Table 4-76 Experiment Result Salt & Pepper PSNR Noisy (45%).....	142
Table 4-77 Experiment Result Salt & Pepper SSIM Noisy (45%)	142
Table 4-78 Experiment Result Salt & Pepper PSNR Noisy (50%).....	143
Table 4-79 Experiment Result Salt & Pepper SSIM Noisy (50%)	144
Table 4-80 Experiment Result PSNR Noisy(5%)	145
Table 4-81 Experiment Result SSIM Noisy(5%).....	145
Table 4-82 Experiment Result PSNR Noisy (10%)	146
Table 4-83 Experiment Result PSNR Noisy (10%)	146
Table 4-84 Experiment Result PSNR Noisy (15%)	148
Table 4-85 Experiment Result SSIM Noisy (15%).....	148
Table 4-86 Experiment Result PSNR Noisy (20%)	149
Table 4-87 Experiment Result SSIM Noisy 20%	149
Table 4-88 Experiment Result PSNR Noisy 25%.....	150
Table 4-89 Experiment Result SSIM Noisy 25%	151
Table 4-90 Experiment Result PSNR Noisy 30%.....	152

Table 4-91 Experiment Result PSNR ssim30%	152
Table 4-92 Experiment Result PSNR Noisy 35%.....	153
Table 4-93 Experiment Result SSIM Noisy 35%	154
Table 4-94 Experiment Result PSNR Noisy 40%.....	155
Table 4-95 Experiment Result SSIM Noisy 40%	155
Table 4-96 Experiment Result PSNR Noisy 45%.....	156
Table 4-97 Experiment Result SSIM Noisy 45%	156
Table 4-98 Experiment Result PSNR Noisy 50%.....	157
Table 4-99 Experiment Result SSIM Noisy 50%	157
Table 4-100 Experiment Result Scratch PSNR Embedded Image.....	159
Table 4-101 Experiment Result Scratch PSNR Recovered Image.....	160
Table 4-102 Experiment Result Scratch SSIM Embedded Image	161
Table 4-103 Experiment Result Scratch SSIM Recovered Image	162