CMSE492 Seminar 09.05.2019 Task on SPAM Steganalysis

1. Consider the grayscale image, I, below having 5 rows and 5 columns:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Col1 | Col2 | Col3 | Col4 | Col5 |
| Row1 | 10 | 205 | 101 | 11 | 12 |
| Row2 | 255 | 235 | 193 | 221 | 207 |
| Row3 | 23 | 28 | 121 | 21 | 12 |
| Row4 | 121 | 170 | 211 | 13 | 9 |
| Row5 | 5 | 6 | 7 | 11 | 8 |

1. Calculate for right-up direction if T=3 according to formulas from [SPAM method](https://staff.emu.edu.tr/alexanderchefranov/Documents/CMSE492/PevnyIEEETIFS%20Steganalysis%20by%20Subtractive%20Pixel%20Adjacency%20Matrix.pdf), p. 217
2. Bring your homework showing details of your work to the seminar
3. Your homework and participation in the seminar will be graded (50% +50%)

Solution

Calculate :

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Col1 | Col2 | Col3 | Col4 |
| Row1 | 50 | 134 | 182 | 209 |
| Row2 | -212 | -165 | -100 | -186 |
| Row3 | 93 | 49 | 190 | 1 |
| Row4 | -165 | -205 | -6 | 2 |

Calculate , for T=3, by calculating frequencies of appearing u with right-up neighbor being v: Count(|/Count(

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| u\v | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| -3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| -2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

All values are zero because for no one value in the range –T..T has up-right neighbor from that range also.

Count(, Count()=1

Hence, , but u=-165, v=182 are not in the range -3..3