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Report Part 2

Koala

Original Size = 762 KB

K=2

|  |  |  |
| --- | --- | --- |
| Size | Pictures | Compression Ratio |
| 133 |  | 5.729323 |
| 124 |  | 6.145161 |
| 119 |  | 6.403361 |
| 124 |  | 6.145161 |
| 124 |  | 6.145161 |

Average = 6.11363

Variance = 0.058655

K=5

|  |  |  |
| --- | --- | --- |
| Size | Pictures | Compression Ratio |
| 164 |  | 4.646341 |
| 162 |  | 4.703704 |
| 158 |  | 4.822785 |
| 169 |  | 4.508876 |
| 152 |  | 5.013158 |

Average = 4.73897

Variance =0.036243

K=10

|  |  |  |
| --- | --- | --- |
| Size | Pictures | Compression Ratio |
| 159 |  | 4.792453 |
| 157 |  | 4.853503 |
| 157 |  | 4.853503 |
| 159 |  | 4.792453 |
| 166 |  | 4.590361 |

Average = 4.77645

Variance =0.011754

K=15

|  |  |  |
| --- | --- | --- |
| Size | Pictures | Compression Ratio |
| 155 |  | 4.916129 |
| 153 |  | 4.980392 |
| 155 |  | 4.916129 |
| 156 |  | 4.884615 |
| 156 |  | 4.884615 |

Average = 4.91638

Variance =0.001529

K=20

|  |  |  |
| --- | --- | --- |
| Size | Pictures | Compression Ratio |
| 152 |  | 5.013158 |
| 150 |  | 5.08 |
| 152 |  | 5.013158 |
| 151 |  | 5.046358 |
| 153 |  | 4.980392 |

Average = 5.02661

Variance =0.001435

Penguins

Original Size = 759 KB

K=2

|  |  |  |
| --- | --- | --- |
| Size | Pictures | Compression Ratio |
| 83 |  | 9.144578 |
| 83.3 |  | 9.111645 |
| 82.9 |  | 9.155609 |
| 83.6 |  | 9.078947 |
| 83.2 |  | 9.122596 |

Average = 9.12268

Variance =0.0009

K=5

|  |  |  |
| --- | --- | --- |
| Size | Pictures | Compression Ratio |
| 98.4 |  | 7.713415 |
| 104 |  | 7.298077 |
| 113 |  | 6.716814 |
| 104 |  | 7.298077 |
| 97.7 |  | 7.76868 |

Average = 7.35901

Variance =0.178318

K=10

|  |  |  |
| --- | --- | --- |
| Size | Pictures | Compression Ratio |
| 117 |  | 6.487179 |
| 123 |  | 6.170732 |
| 114 |  | 6.657895 |
| 116 |  | 6.543103 |
| 117 |  | 6.487179 |

Average = 6.46922

Variance =0.032699

K=15

|  |  |  |
| --- | --- | --- |
| Size | Pictures | Compression Ratio |
| 116 |  | 6.543103 |
| 114 |  | 6.657895 |
| 112 |  | 6.776786 |
| 122 |  | 6.221311 |
| 113 |  | 6.716814 |

Average = 6.58318

Variance =0.04837

K=20

|  |  |  |
| --- | --- | --- |
| Size | Pictures | Compression Ratio |
| 115 |  | 6.6 |
| 117 |  | 6.487179 |
| 116 |  | 6.543103 |
| 114 |  | 6.657895 |
| 117 |  | 6.487179 |

Average = 6.55507

Variance =0.005488

Is there a tradeoff between image quality and degree of compression. What would be a good value of K for each of the two images?

There seems to be a negative correlation between image quality and degree of compression. When degree of compression increases, the image quality decreases. When degree of compression decreases, the image quality increases. The effect is not linear. Lower values of k seem to have more of a jump. Take for example when K = 2 the average compression ratio is 9.12268 at K = 5 the compression ratio is 7.35901. At K = 15 the average compression ratio is 6.46922. At K = 20 it is 6.58318. The jump from K = 2 to K = 5 made a significant change compared to the jump from K = 15 and K = 20 even though it was a greater jump. A good value of K for each of the images depends on how much we prioritize quality and compression. K = 10 and K =15 seem to have good quality and compression ratio.