Homework #2 – Computer Image Processing

# Bit plane masking

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Input Image:** Original Image wih good contrast and clear details. |  |  | **Mask Bits 3-6:** Significantly darker from original image. Less contrast. |  |
| **Mask Bits 1-4:** Darker. Less contrast. |  |  | **Mask Bits 5-8:** No more details are present. Completely black square because bits 5-8 are very significant. |  |

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### Question A: What effect does setting the lower-order bit planes have on the histogram of an image?

Setting the lower-order bit planes to zero (bits 1-4) made an image appear darker and reduced the contrast between light and dark grayscale intensity values.

### Question B: What effect would setting the higher-order bit planes have on the histogram of an image?

Setting the higher-order bit planes to zero (bits 3-6) greatly reduced the brightness from its original input image. There is also less contrast between the grayscale intensity values.

Setting bitplanes 5-8 to zero turned the image to black. There are no more details that are visible.

# Spatial Filtering Operations

## Filter A: Arithmetic Mean Filter

|  |  |
| --- | --- |
| Input Image | Output |
|  |  |
|  |  |
|  |  |

### Analysis:

This is my analysis of the filter.

## Filter B: Geometric Mean Filter

|  |  |
| --- | --- |
| Input Image | Output |
|  |  |
|  |  |
|  |  |

### Analysis:

This is my analysis of the filter.

## Filter C: Harmonic Mean Filter

|  |  |
| --- | --- |
| Input Image | Output |
|  |  |
|  |  |
|  |  |

### Analysis:

This is my analysis of the filter.

## Filter D: Contraharmonic Mean Filter

|  |  |
| --- | --- |
| Input Image | Output |
|  |  |
|  |  |
|  |  |

### Analysis:

This is my analysis of the filter.

## Filter E: Max Filter

|  |  |
| --- | --- |
| Input Image | Output |
|  |  |
|  |  |
|  |  |

### Analysis:

This is my analysis of the filter.

## Filter F: Min Filter

|  |  |
| --- | --- |
| Input Image | Output |
|  |  |
|  |  |
|  |  |

### Analysis:

This is my analysis of the filter.

## Filter G: Midpoint Filter

|  |  |
| --- | --- |
| Input Image | Output |
|  |  |
|  |  |
|  |  |

### Analysis:

This is my analysis of the filter.

## Filter H: Alpha-trimmed Mean Filter

|  |  |
| --- | --- |
| Input Image | Output |
|  |  |
|  |  |
|  |  |

### Analysis:

This is my analysis of the filter.