DIGITAL IMAGE PROCESSING

Image Enhancement in Spatial Domain : Session 2

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Today's Lecture

- **Image Enhancement in Spatial Domain**
  - **Histogram Equalization**
  - **Histogram Matching**

Image Enhancement in Spatial Doma

Histogram Processing

Image Enhancement in Spatial Doma

Histogram Processing

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Histogram Equalization

Cumulative Distribution Function
Satisfies condition (a) and (b)

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Histogram Equalization

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Histogram Equalization: Example

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Histogram Equalization: Example

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Histogram Equalization

histogram equalization or linearization

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Histogram Equalization: Example

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Histogram Equalization: Example

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Histogram Matching (Histogram Specification)

- **Generate a processed image that has a specified histogram**

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Histogram Matching (Histogram Specification)

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Histogram Matching: Procedure

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Histogram Matching: Example

- Assuming continuous intensity values, suppose that an image has the intensity PDF

- Find the transformation function that will produce an image whose intensity PDF is

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Histogram Matching: Example

- Find the histogram equalization transformation for the input image

- Find the histogram equalization transformation for the specified histogram

- The transformation function

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Histogram Matching: Discrete Case

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Histogram Matching: Example (Discrete Case)

Obtain the scaled histogram-equalized values,

Compute all the values of the transformation function G,

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Histogram Matching: Example **(Discrete Case)**

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Histogram Matching: Example (Discrete Case)

- Obtain the scaled histogram-equalized values,

- Compute all the values of the transformation function G,

s_0 s_1

s_2 s_3

s_4 s_5 s_6 s_7

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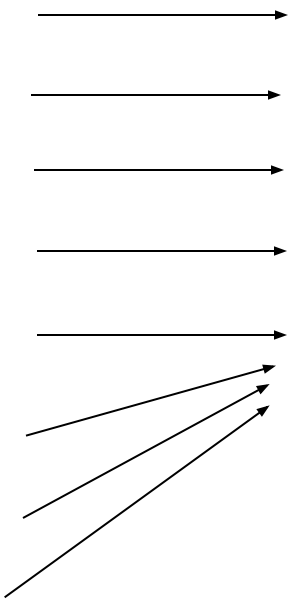
Histogram Matching: Example (Discrete Case)



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Histogram Matching: Example **(Discrete Case)**

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Histogram Matching: Example

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Histogram Matching: Example

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Histogram Matching: Example

Next Class

- **Image Enhancement in Spatial Domain**
  - **Local Histogram Processing**
  - **Using Histogram Statistics for Image Enhancement**

Thank you:
Question?