

HISTOGRAMAS

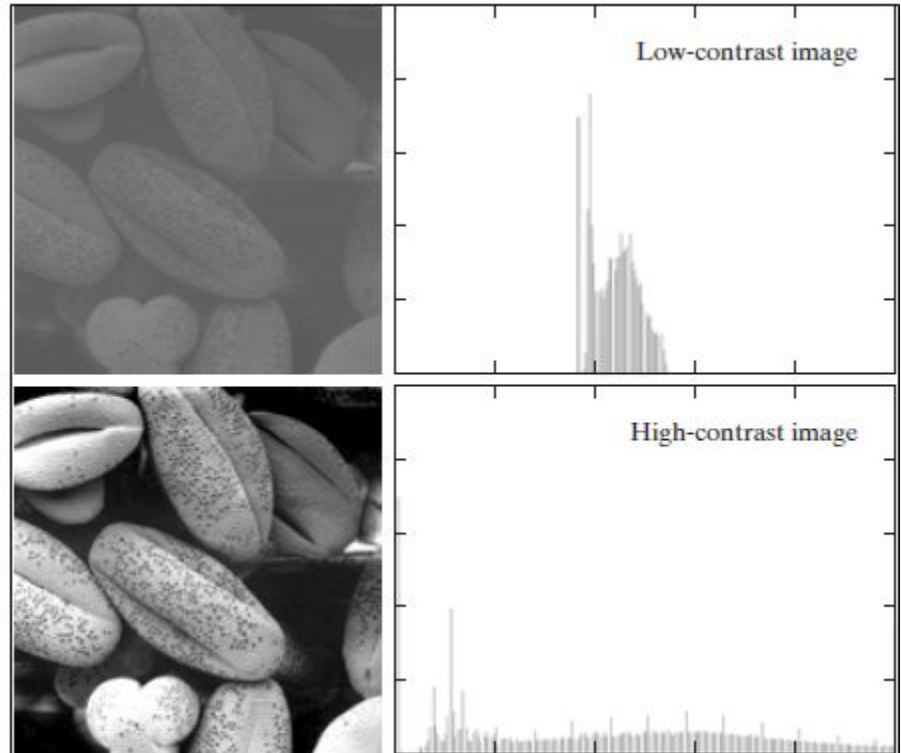
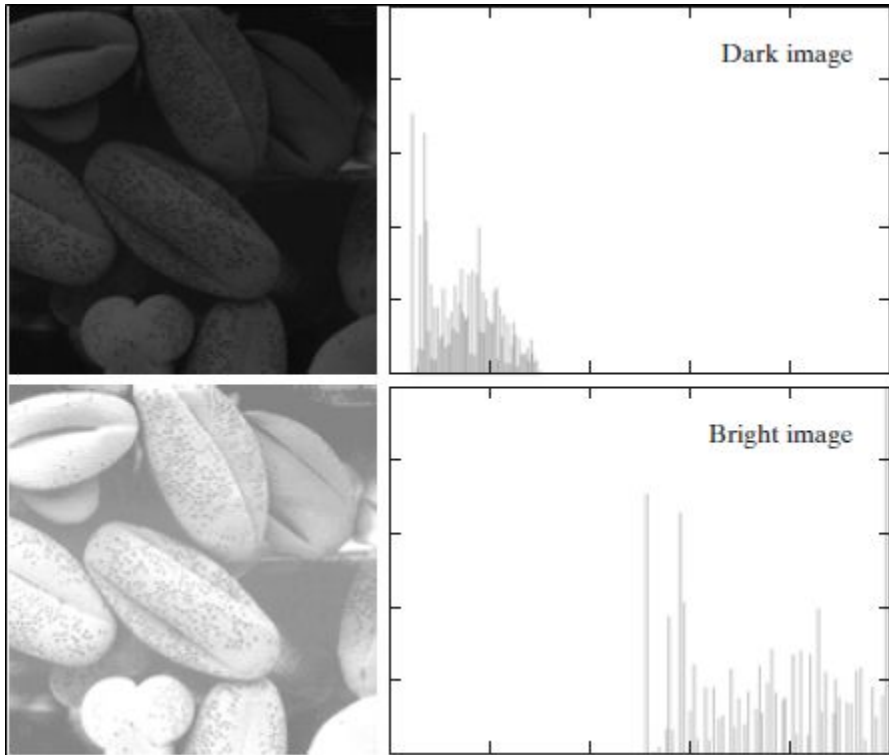
ES235 – Aula 03
João Marcelo Teixeira
Willams Costa

DEFINIÇÃO

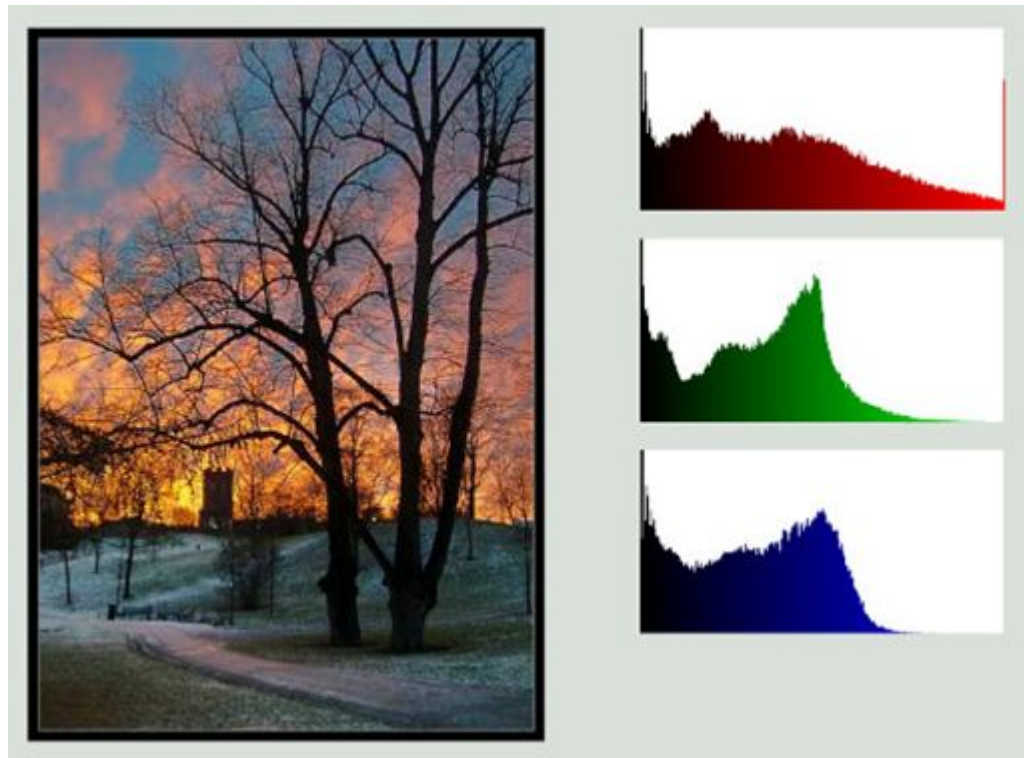
Em estatística: representação gráfica que ilustra uma distribuição de dados

Em processamento de imagem: representação gráfica da distribuição de luminância/cor em uma imagem digital (resumidamente, são plotados as quantidades de pixels de cada cor)

DEFINIÇÃO



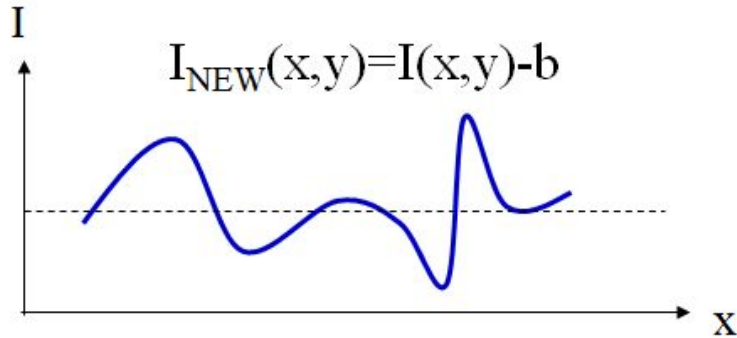
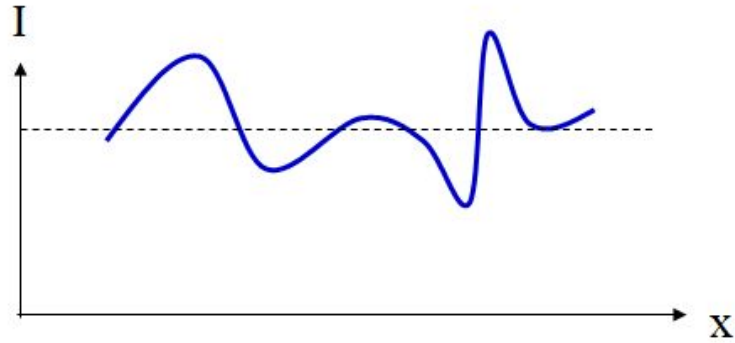
DEFINIÇÃO



APLICAÇÕES

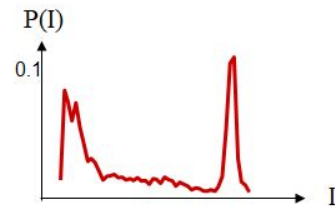
- Detecção de padrões
- Melhoramento adaptativo
- Limiarização adaptativa
- Rastreamento
- . . .

OPERAÇÕES EM HISTOGRAMAS - VARIANDO A MÉDIA

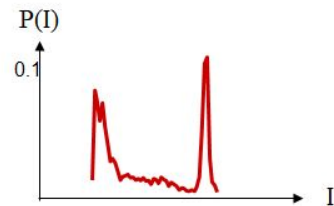
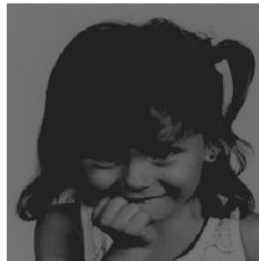


OPERAÇÕES EM HISTOGRAMAS - OUTRAS (1)

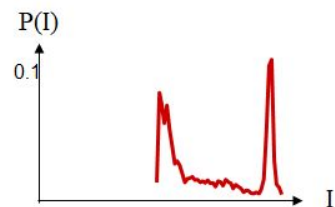
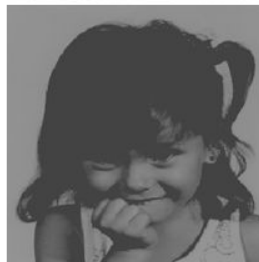
Original image



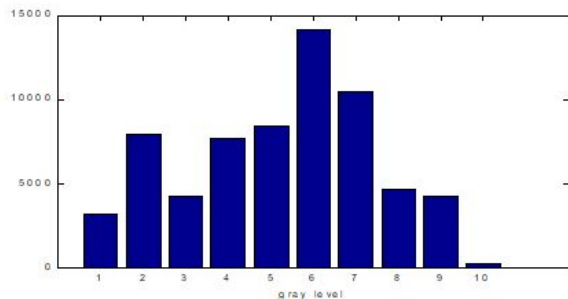
Decreasing contrast



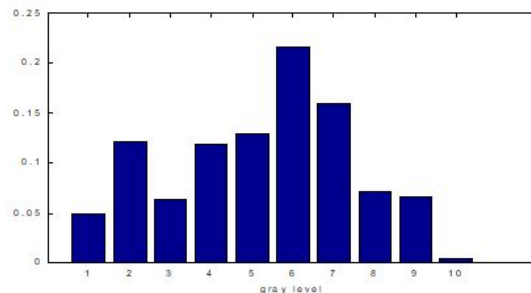
Increasing average



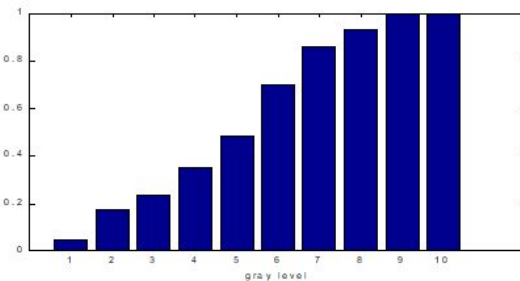
OPERAÇÕES EM HISTOGRAMAS - OUTRAS (2)



Histogram



Normalized Histogram



Accumulated Histogram

COMPARAÇÃO DE HISTOGRAMAS

Distância Euclidiana

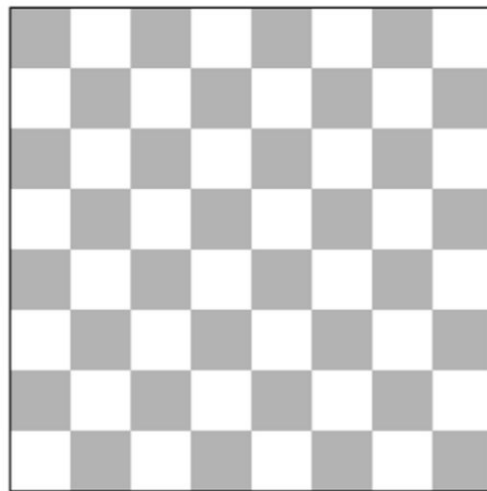
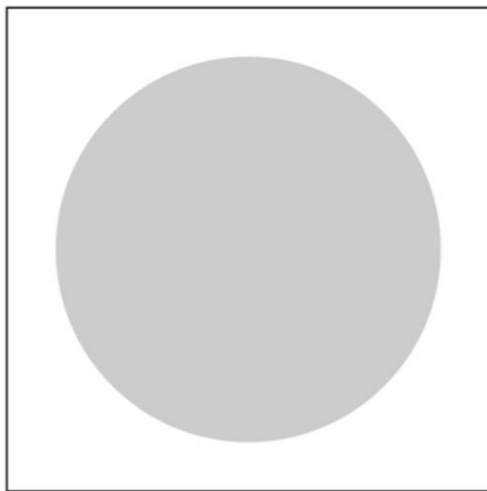
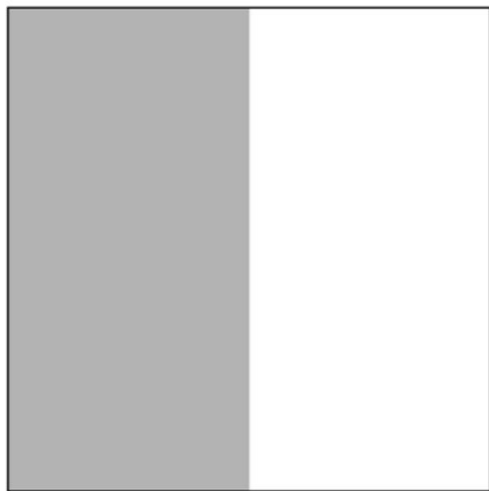
Minkowski Distance

Kullback-Leibler (KL) Distance

...

COMPARAÇÃO DE HISTOGRAMAS

Problema: as imagens abaixo possuem o mesmo histograma



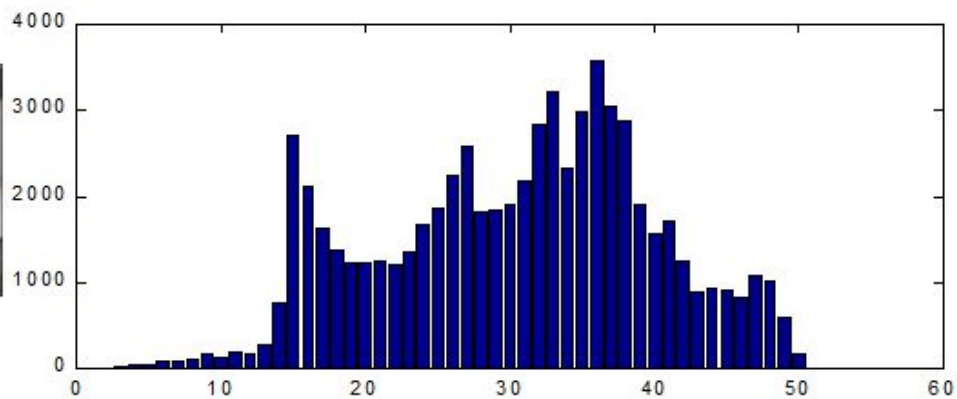
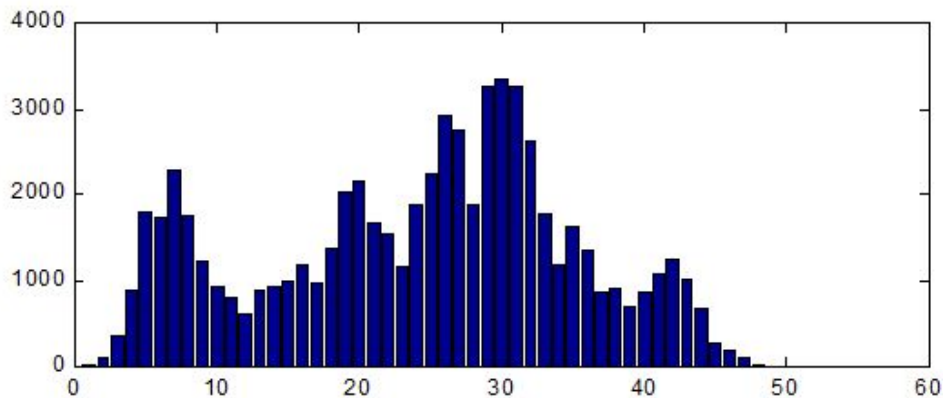
APLICAÇÃO PRÁTICA: AUTO-FOCO

Como ajustar automaticamente o foco?

- Média não é afetada pela falta de foco
- Entropia diminui com a falta de foco



APLICAÇÃO PRÁTICA: AUTO-FOCO



REFERÊNCIAS

Rafael C. Gonzalez and Richard E. Woods. 2006. Digital Image Processing (3rd Edition). Prentice-Hall, Inc., Upper Saddle River, NJ, USA.

<https://web.cs.wpi.edu/~emmanuel/courses/cs545/S14/slides/lecture02.pdf>

<http://www.philadelphia.edu.jo/academics/inaji/uploads/DIP11%20-%20Histogram%20Processing.ppt>

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