Image Processing Foundation: a 4-day class

Image Processing

Benefits

- Image and Video Processing
- Image capture and sampling
- MPEG and JPEG

You will learn to understand Image and Video Processing in the context of Consumer Electronics.

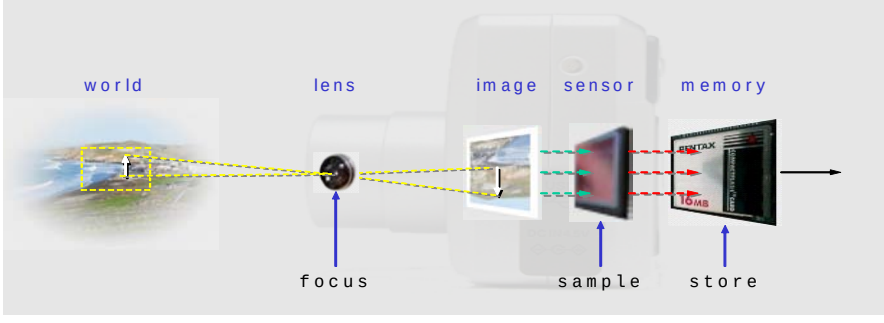

Image processing for Consumer Electronics

Contents

In this class we explain how image are captured, processed and compressed in consumer electronics applications. The class offers real practical insight and uses many demonstrations (with optional 'hands-on'). It covers all the essentials and provides rock solid foundation for engineers and managers working in this field.

Images

Basics of digital images including context and purpose, conventions and the image capture chain.

- Pictures
- Scenes, frames and images
- Field of view
- Focus of attention

Image transforms

We introduce transforms in image processing, including the concepts of spatial frequency and the wavelet transform.

- Spatial frequency
- Fourier Transforms
- 2D transforms
- Edges, lines and patterns
- Image filtering
- Discrete Cosine Transform
- Wavelets

Image sampling

How images are sampled and the effect this has.

- Raster scan and image sampling
- Aliasing and reconstruction
- Video time sampling
- Frames, fields and interlace

Enhancement & correction

We outline important techniques for enhancement and correction of images, including geometric distortion as well as color balance.

- Sharpening and de-blurring
- Auto focus
- Scaling and interpolation
- Edge detection and enhancement
- Histogram modification
- Color balance
- De-interlacing and pull-down

Color and vision

Color, vision and the human dimension: color spaces and perceptive coding.

- Luminance and color
- Resolution and sensitivity
- Color spaces: RGB and YUV
- Color sampling schemes
- Color leakage and aliasing

JPEG and MPEG

In this section we give a thorough treatment of the basis for JPEG and MPEG compression: covering JPEG2000 and MPEG-4 (H.264).

- Perceptive compression
- Block-based compression
- DCT and quantization
- Wavelet Transforms
- Motion compensation
- JPEG and JPEG 2000
- MPEG-2 and MPEG-4

Time and arrangements

This class takes 4 days.

It is presented 'on-site' by arrangement - the material can be adapted if you have specific needs (at extra cost).

Sometimes we arrange 'public' classes: schedules are posted on the Internet:

http://www.bores.com/schedule.htm

Pic'N'Mix

'You can design a class to suit your specific needs. Each topic in this DSP Foundation class can be a self-contained session, from which you can "pic'n'mix" to make your own class.

Contact us for details and advice:

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Booking and questions

Call us by 'phone or send email to book or to ask questions.

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About us

BORES Signal Processing train managers, engineers and programmers to understand and use DSP and streaming media processing.

- established 17 years
- excellent reputation
- worldwide activities
- www.bores.com