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Disclaimer:

This pathfinder contains suggested materials on Semiconductors that are available at the College of Engineering Library II. However, some references were not included.

We welcome suggestions for new pathfinder topics.

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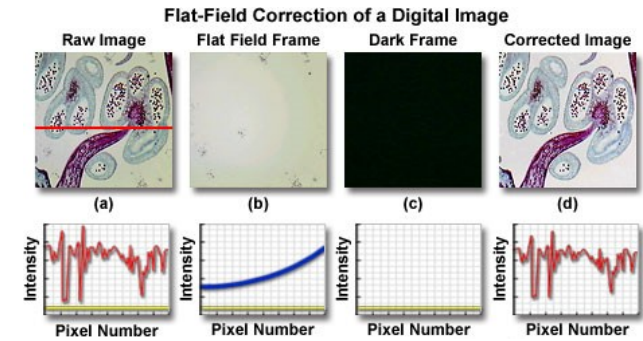


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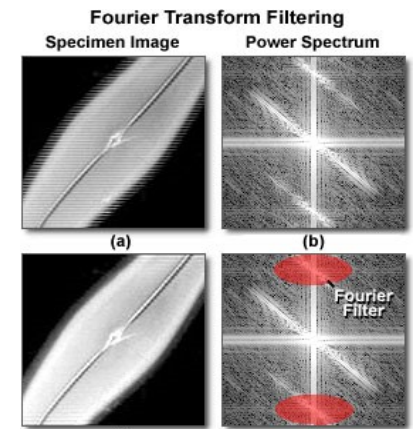


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DIGITAL IMAGE PROCESSING

PATHFINDER



DIGITAL IMAGE PROCESSING

- Is the use of computer algorithms to perform image processing on digital images. As a subfield of digital signal processing, digital image processing has many advantages over analog image processing; it allows a much wider range of algorithms to be applied to the input data and can avoid problems such as the build up of noise and signal distortion during processing.

History

- Many of the techniques of digital image processing or digital picture processing as it was often called, were developed in the 1960s at the Jet Propulsion Laboratory, MIT, Bell Labs, University of Maryland and a few other places, with application to satellite imagery, wirephoto standards conversion, medical imaging, videophone, character recognition and photo enhancement. But the cost of processing was fairly high with the computing equipment of that era. In the 1970s, digital image processing proliferated, when cheaper computers and dedicated hardware became available. Images could then be processed in real time, for some dedicated problems such as television standards conversion. As general purpose computers became faster, they started to take over the role of dedicated hardware for all but the most specialized and compute intensive operations.

Tasks

- Digital image processing allows the use of much more complex algorithms for image processing and hence can offer both more sophisticated performance at simple tasks, and the implementation of methods which would be impossible by analog means.

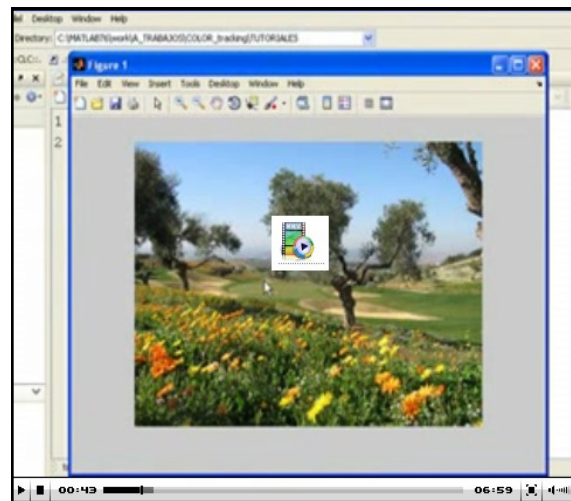
In particular digital image processing is the only practical technology for:

- Classification
- Feature extraction
- Pattern recognition
- Projection
- Multi-scale signal analysis

Some techniques which are used in digital image processing include:

- Principal components analysis
- Independent component analysis
- Self-organizing maps
- Hidden Markov models
- Neural networks

Source: http://en.wikipedia.org/wiki/Digital_image_processing



Source: http://www.mathworks.com/matlabcentral/faq_files/22539/2/INTRO_DIP.PNG

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