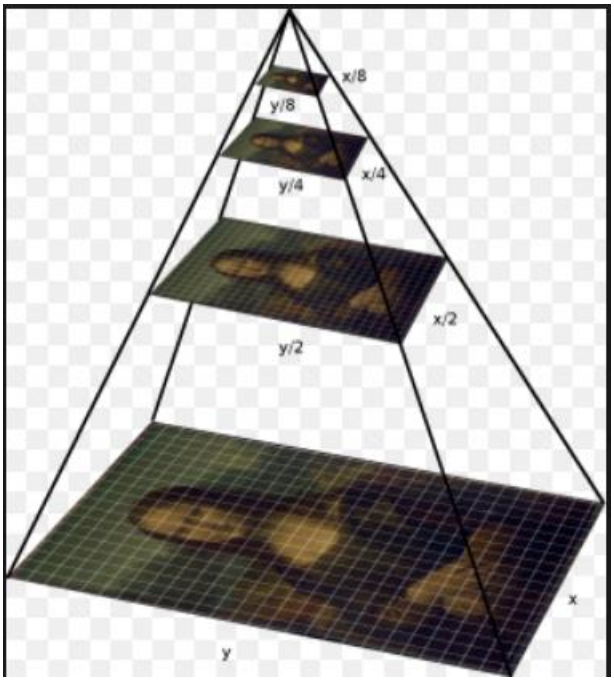
MULTI RESOLUTION PYRAMIDS

https://www.youtube.com/watch?v=bk_VV_E4m-Y

It is the one way to do this multi resolution processing and constructing a pyramid of images.

First we start from original image say size nxn and then shrink it to half so, n/2 x n/2 and shrink again with same factor and so finally we will get up a single pixel size image at the very top of the pyramid, so it is a pyramid of images each one is progressively sub samples or approximate version of the original image.



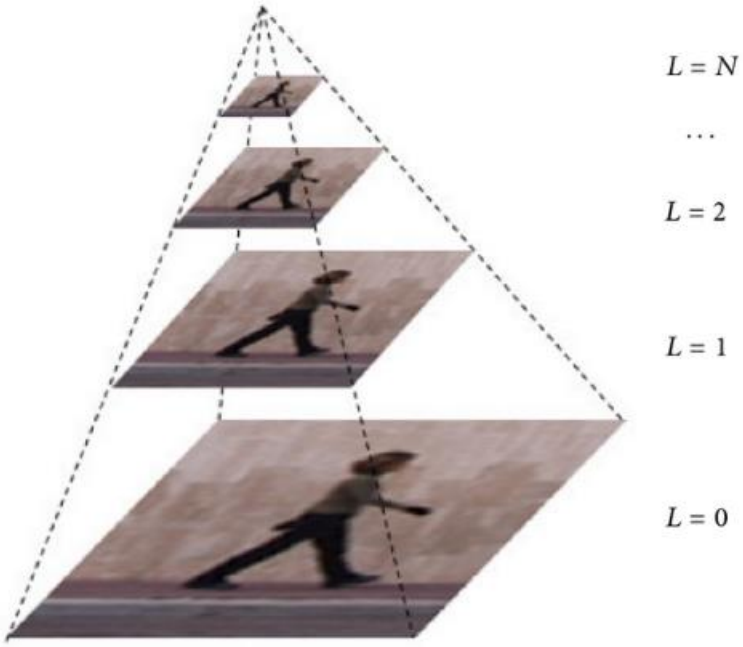


Image Pyramids

What is an image pyramid?

A powerful , simple structure for representing images at more than one resolution.
an image pyramid is a collection of decreasing resolution images arranged in the shape of a pyramid .

7.1 Background

7.2 Multi Resolution Expansions

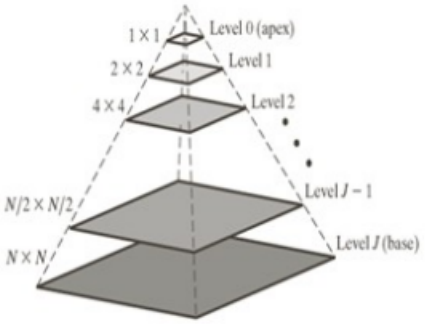
7.3 Wavelet Transform in One Dimension

7.4 The Fast Wavelet Transform

7.5 Wavelet Transform in Two Dimensions

7.6 Wavelet Packets

(a) : The base of the pyramid contains a high-resolution representation of the image being Processed; the apex contains a low-resolution approximation . As you move up the pyramid, both size and resolution decrease.



a
b

FIGURE 7.2
(a) An image pyramid. (b) A simple system for creating approximation and prediction residual pyramids.

Subband Coding

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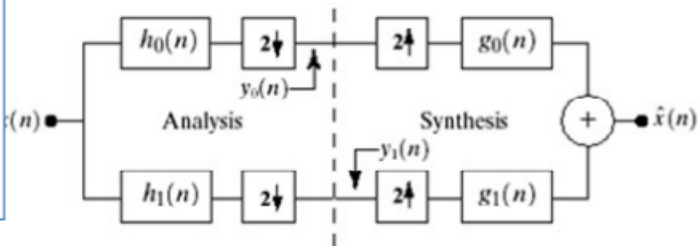
Definition :

in subband coding :an image is decomposed into a set of band limited components, called subbands. The decomposition is performed so that the subbands can be reassembled to reconstruct the original image without error.

* A filter bank is a collection of two or more filters.



Subband Coding

The goal in subband coding is to select h0(n),h1(n),g0(n),g1(n) so that x(n) = x'(n)

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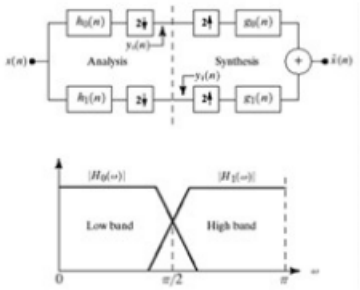

filters go(n) and g1(n) combine y0(n) and y1 (n) to produce x'(n).