



SNS COLLEGE OF TECHNOLOGY

Coimbatore-35
An Autonomous Institution

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Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai



DEPARTMENT OF BIOMEDICAL ENGINEERING

19BMB302 - BIOMEDICAL SIGNAL PROCESSING

III YEAR/ V SEMESTER

Unit 1 : TRANSFORMS

19BMB302 - Biomedical Signal Processing / Unit-1 / Dr. K. Manoharan, ASP / BME / SNSCT



TRANSFORMS

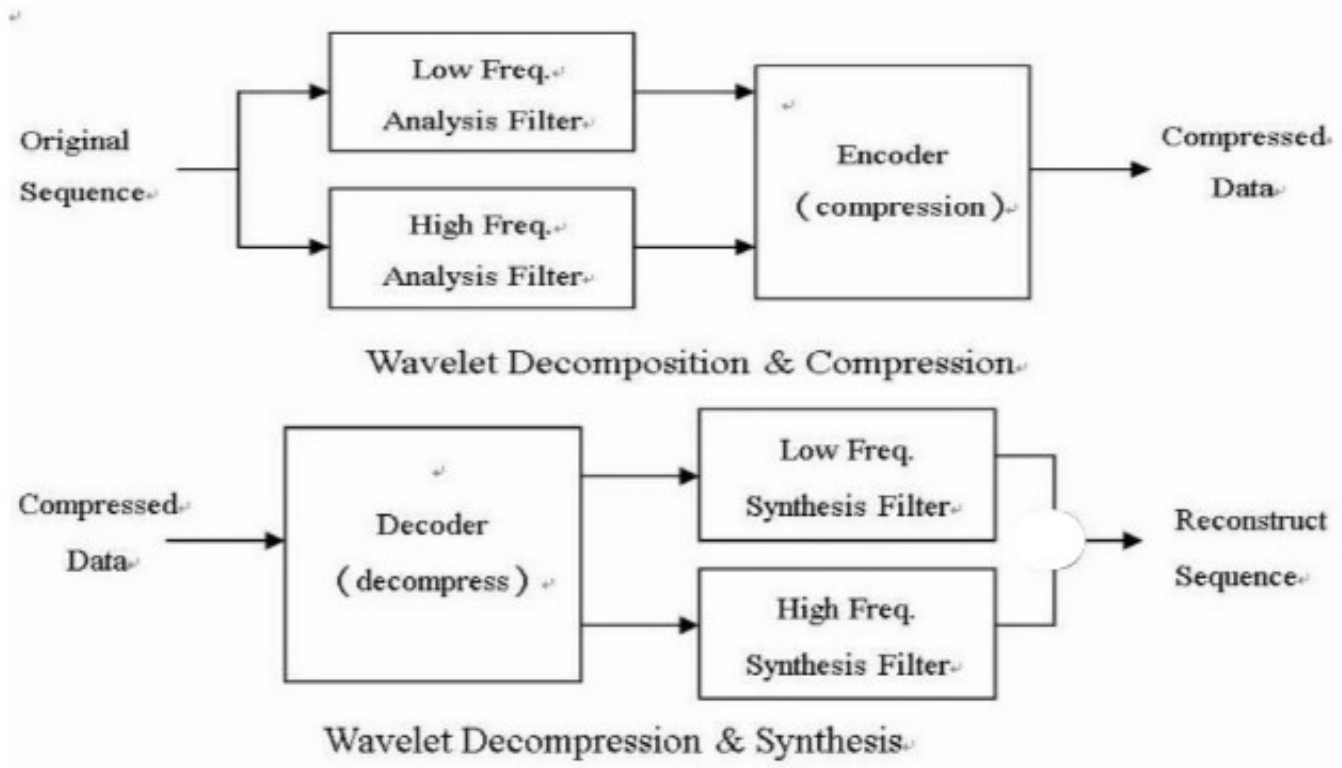
- Introduction and Sampling theorem
- ECG signal conversion system
- Discrete Fourier Transform (DFT)
- Decimation in time FFT
- Decimation in time FFT Problems
- Decimation in frequency FFT
- Decimation in frequency FFT Problems
- Multi rate Signal Processing
- Wavelet Transform



Wavelet Transform



- A wavelet is a mathematical function used to divide a given function or continuous-time signal into different scale components.
- A major disadvantage of the Fourier Transform is it captures *global* frequency information, meaning frequencies that persist over an entire signal.
- This kind of signal decomposition may not serve all applications well (e.g. Electrocardiography (ECG) where signals have short intervals of characteristic oscillation).
- An alternative approach is the **Wavelet Transform**, which **decomposes a function into a set of wavelets**.





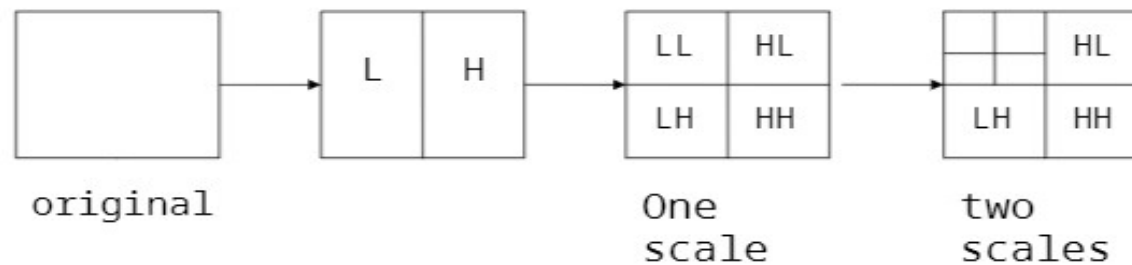
- 2-D Discrete Wavelet Transform
- A 2-D DWT can be done as follows:

Step 1: Replace each row with its 1-D DWT;

Step 2: Replace each column with its 1-D DWT;

Step 3: repeat steps (1) and (2) on the lowest subband for the next scale

Step 4: repeat steps (3) until as many scales as desired have been completed





Thank You!