

TD Machine: Short-Time Fourier Transfor

Objective: Verify COLA property, OLA and WOLA method

A-/ Check constant-overlap-add criteria of following examples

- Rectangular window at 0% overlap (hop size $R = \text{window size } M$)
- Bartlett window at 50% overlap ($R \sim M/2$) (*Since normally M is odd, " $R \sim M/2$ " means " $R=(M-1)/2$ ", etc.)*)
- Hamming window at 50% overlap ($R \sim M/2$)
- Rectangular window at 50% overlap ($R \sim M/2$)
- Hamming window at 75% overlap ($R = M/4 = 25\%$ hop size)
- Blackman family at 2/3 overlap (1/3 hop size); e.g.,
blackman(33,'periodic')

B-/ Implement STFT method (OLA) using hamming wadow w/50% Ovelap and verify the reconstruction in temporal domain

- $x(n) = \text{somme}(x_k(n))$
- OLA principle including STFT and ISTFT.

C-/ Implement WOLA method and propose a unique widow for both analysis and synthesis