

Ex.1 - Pitch Detection and Linear Prediction

- ❶ Load the file `voiced_a.wav` and consider frames of duration 25 ms
 - ❶ Detect the pitch using zero-crossing rate on the original signal
 - ❷ Detect the pitch using zero-crossing rate on the signal filtered with a passband filter
 - pass band: 50 - 600 Hz, stop band: 25 - 650 Hz
 - pass band ripple: 4.5 dB, stop band attenuation: 10 dB
 - ❸ Detect the pitch using autocorrelation
 - ❹ Detect the pitch using Cepstrum

Ex.1 - Pitch Detection and Linear Prediction

- ① Perform linear prediction for each frame
 - ① Compute LP coefficients of order 12
 - ② Plot the prediction error and its magnitude spectrum
 - ③ Build an impulse train with the estimated pitch period
 - ④ Consider the impulse train as excitation and build synthetic speech

Ex. 2 - Vocoder with voiced/unvoiced classification

- 1 Load the files `a.wav` and `shh.wav` and build a single signal $x(t)$

