Homework 5

1. LTP design: In matlab, develop a program to compute the LTP filter (open loop). Use it in conjunction with the linear prediction filter and verify its operation. Plot the speech sequence, output of the linear prediction filter \( e[n] \) and the output of the LTP filter \( w[n] \) for a frame of voiced and unvoiced speech. Compute the statistics (histogram) of the LTP gain by computing the gain for a number of frames and comment on its effectiveness on voiced and unvoiced classification.

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\begin{align*}
\text{s[n]} & \rightarrow A(z) & \text{e[n]} & \rightarrow B(z) & \text{w[n]}
\end{align*}
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