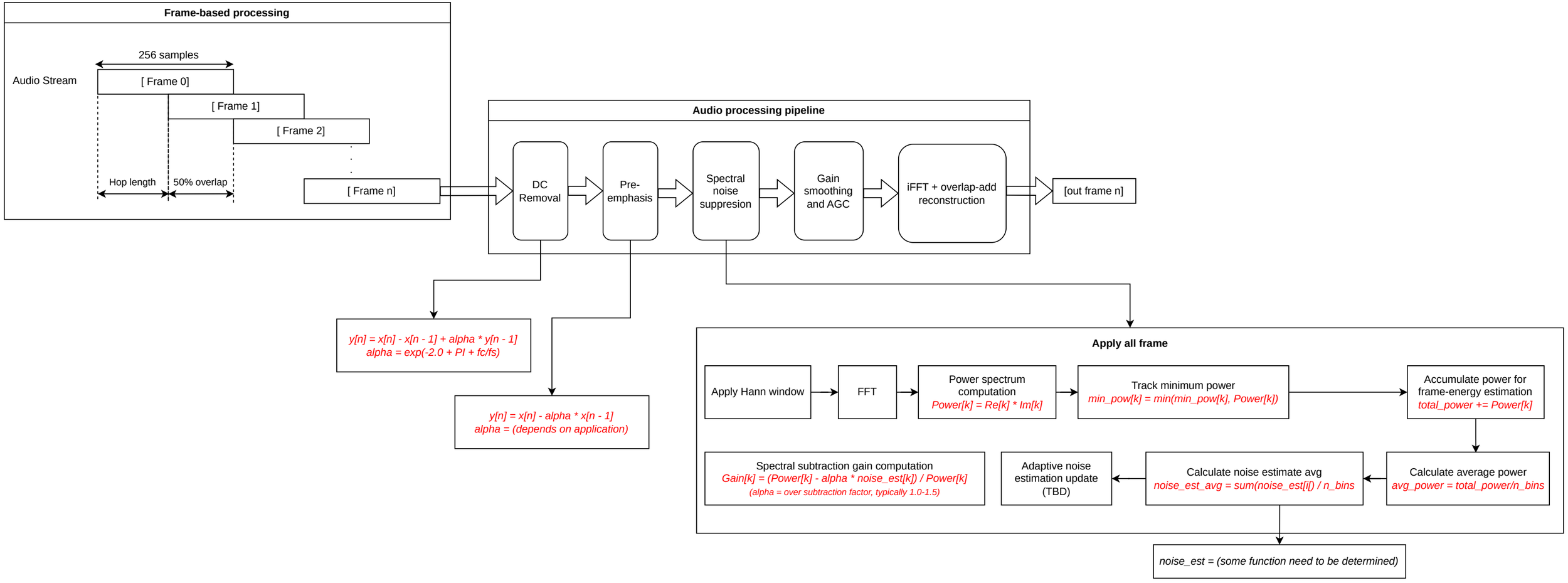
Frame-based processing
256 samples
Audio Stream
[Frame 0]
[Frame 1]
[Frame 2]
Hop length
50% overlap
[Frame n]
Audio processing pipeline
DC Removal
Pre-emphasis
Spectral noise suppresion
Gain smoothing and AGC
iFFT + overlap-add reconstruction
[out frame n]
y[n] = x[n] - x[n - 1] + alpha * y[n - 1]
alpha = exp(-2.0 + PI + fc/fs)
y[n] = x[n] - alpha * x[n - 1]
alpha = (depends on application)
Apply all frame
Apply Hann window
FFT
Power spectrum computation
Power[k] = Re[k] * Im[k]
Track minimum power
min_pow[k] = min(min_pow[k], Power[k])
Accumulate power for frame-energy estimation
total_power += Power[k]
Calculate average power
avg_power = total_power/n_bins
Calculate noise estimate avg
noise_est_avg = sum(noise_est[i] / n_bins
Adaptive noise estimation update (TBD)
Spectral subtraction gain computation
Gain[k] = (Power[k] - alpha * noise_est[k]) / Power[k]
(alpha = over subtraction factor, typically 1.0-1.5)
noise_est = (some function need to be determined)