**DSP Project Information**

Cepstral Mean Normalization (CMN) is a technique used to reduce the variability in the MFCCs caused by different speaker's speaking styles, recording environments, and other factors. It is a technique that normalizes the mean of the cepstral coefficients across all frames of the speech signal.

The basic idea behind CMN is that it shifts the cepstral coefficients of each frame by a constant value so that the mean cepstral coefficient for all frames is the same. This helps to reduce the variability in the cepstral coefficients caused by different speaking styles and recording environments, making the MFCCs more robust to these factors.

The process of CMN is typically done by subtracting the mean cepstral coefficient of all frames from each frame's cepstral coefficient. The mean cepstral coefficient is calculated by averaging the cepstral coefficients of all frames. The subtraction is done for each coefficient separately.

This technique can help to improve the performance of speech recognition systems by reducing the variability in the MFCCs caused by different speaking styles and recording environments. It can also help to reduce the dimensionality of the feature space and make the features more discriminative.

It's important to note that CMN should only be applied to the training data and not the test data, as the test data should be processed in the same way as it would be in a real-world scenario.