By looking at the time domain along with frequency plots of the given data, it seems that the signal contains wideband noise as it spans all across the power spectrum of the signal. Therefore using **simple frequency based filter** would be of no use. Moreover, there are some parts of spectrum where power is much higher than other parts of the spectrum, we can use a simple bandpass filter for removing unwanted lower gain/power regions of the spectrum. In some cases, if you are using MEMS accelerometer, smaller sampling rate can result in lower noise power. Similarly due to flat nature of the power spectrum using **notch filter** would be useless. **Wavelet Interval Dependent Denoising** can prove helpful in removing the noise present in the accelerometer signal. Following are some other methods that are based on Wavelet Interval.

* Denoising Using the Interval Dependent Thresholds (IDT)
* Denoising Using a Single Interval
* Denoising Using the Interval Dependent Thresholds (IDT)
* Automatic Computation of Interval-Dependent Thresholds
* Automatic Interval-Dependent Denoising
* Advanced Automatic Interval-Dependent Denoising

**Savitzky-Golay** filtering is another which is specially used for denoising accelerometer signal from multiple platforms.

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As far as my approached is concerned I would go one by one and test each technique, analyze results after applying multiple parameter involved in denoising method. My personal opinion would be to start with Savitzky-Golay filtering approach as its results are far better than other methods (dependent on the type of accelerometer and platform).

As removing noise is always a hit and trial approach so this work could take up to a month for me with 100-120 usd as my service fee.