# The Function of Fast Fourier Transform (FFT)

Signal denoise based on FFT.

## Description

FFT is an algorithm that converts the time domain signal into the frequency domain signal and vice versa. It achieves noise reduction by filtering out part of the frequency band. It returns the filtered signal. "File Upload" is used to load the required data set, and the required parameters should be set in the "Parameter" field.

## Parameter introduction

Parameters of FFT:

Sample parameter:

* Sampling frequency: Sampling frequency of the bearing. (data type: int)

Function parameters:

* Min: Minimum limited frequency. (data type: float)
* Max: Maximum limited frequency. (data type: float)

**Functional description of the main components**

The overall view of the function of FFT is divided into "File Upload", "Parameter", and "Result".

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### File Upload

The uploaded data files support ".mat", ".txt", ".csv", ".xls", and ".npy" format files.



### Parameter

The user can set the parameters here.

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### Result

After the software has been run, click the "Show Result" button to display the signal diagram before and after noise reduction.

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The "Download" button downloads the relevant result images and data.

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**Examples**

The process of using FFT in signal processing to achieve noise reduction.

**Step 1: Configure the procedure**

Select "Data Processing" from the process bar on the left side of the web page.

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**Step 2: Select the function**

Select the procedure that needs to be configured from the process display area.

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The ''FFT'' function is chosen for signal processing.

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**Step 3: Upload the data file**

Select the data file to be applied from the local path.



Click "Upload" after successfully selecting the upload data file.

**Step 4: Set and save the parameters**

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Firstly, the user needs to set parameters in the blank box.

Then choose "Mode" from the drop-down box.

Finally, click "Save" after all parameters are configured.

**Step 5: Execute the configured procedure**

Before executing the configured function, the user also needs to set the selected output image and file format.

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Finally, select "Run".

**Step 6: Show the result**

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When the progress bar reaches the end, the task is completed.

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Select "Show Result" to simply view the graphical results of the function.

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The displayed result graph is the signal diagram before and after noise reduction.

**Step 7: Download**

Click "Download" to download the file of data and image.

