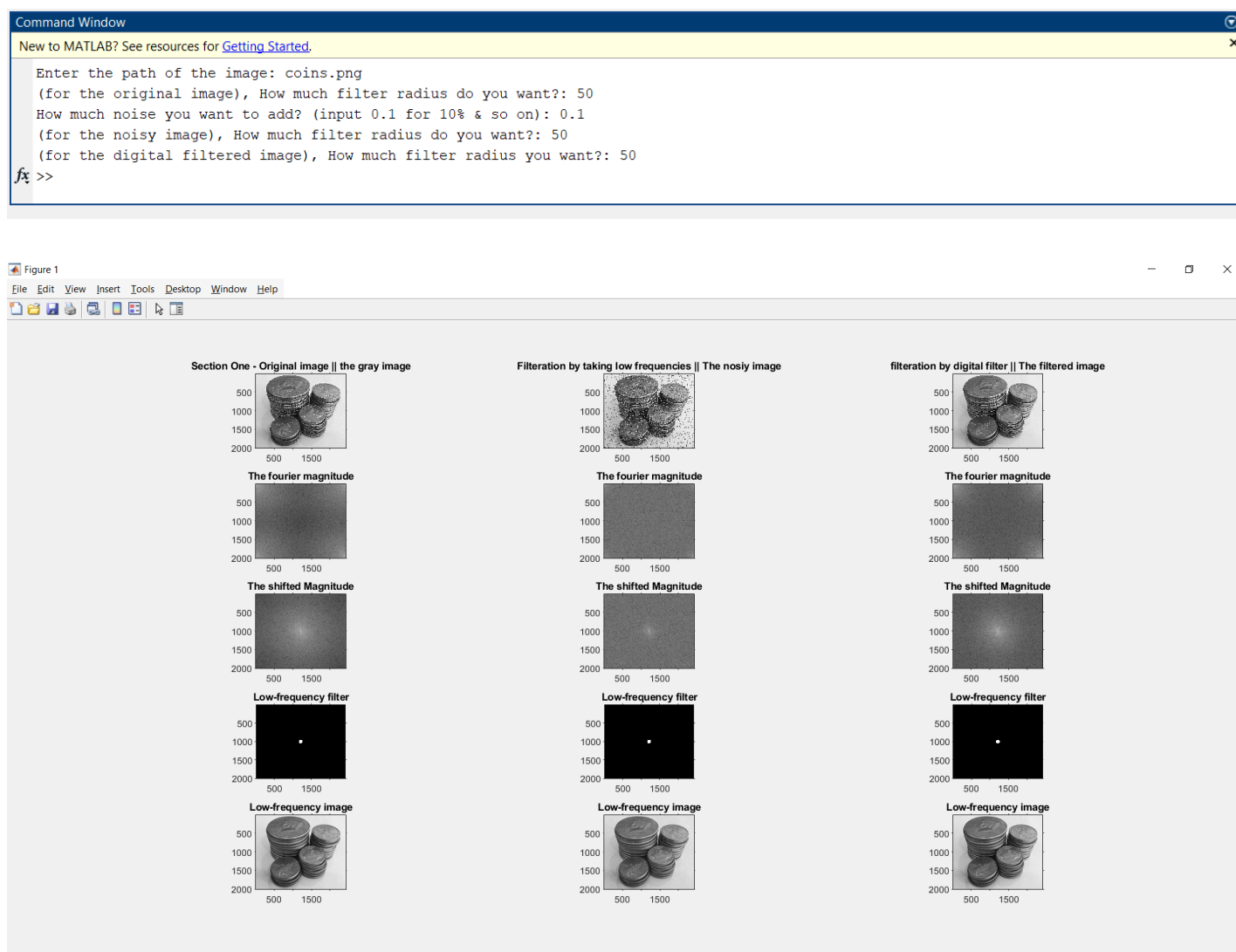


# Image Noise Remover Tool



## ◆ Top Part – MATLAB Command Window:

This section shows the **user interaction in the MATLAB Command Window**, where the tool takes several inputs:

1. **Image path** – The user specifies which image to process ( `coins.png` , or anything).
2. **Filter radius** – The user enters how strong the frequency filter should be ( `50` , or anything).
3. **Noise level** – The user can add artificial noise to test the filter, like 10% Salt & Pepper noise ( `0.1` ).
4. **Separate filter radius values** – The tool allows defining filter radius for both the noisy image and the digitally filtered image separately, giving more control over the process.

This makes the tool interactive and customizable based on user input.

## ◆ Bottom Part – Figure 1 Output (Subplots Window):

This is the main output window, organized into three vertical sections, each showing the **image processing pipeline step-by-step**:

### ■ Section One – Original Image & Basic Processing:

- Grayscale version of the original image.
- Its Fourier magnitude (frequency representation).
- Shifted magnitude (centered frequency domain).
- Applied low-pass frequency filter.
- Final result after applying the inverse FFT.

### ■ Section Two – Noisy Image & Frequency Filtering:

- Grayscale version of the noisy image.
- Its Fourier magnitude and shifted version.
- Low-pass filter applied to the noisy image in the frequency domain.
- Output image showing noise reduction using frequency filtering.

### Section Three – Digital Filter Result (Median Filter):

- Noisy image processed using a **digital median filter**.
- Frequency magnitude and shifted spectrum.
- Applied frequency mask.
- Final output showing improved noise reduction after digital filtering.

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