Load the image: You load the image in grayscale, which simplifies the process by working with a single channel.

Apply FFT: You compute the Fast Fourier Transform (FFT) of the image to convert it from the spatial domain to the frequency domain. Then, you shift the zero-frequency component to the center of the spectrum.

Create a mask: You generate a circular mask with a specified radius (cutoff\_frequency). This mask is used to preserve the low frequencies while eliminating high frequencies.

Apply the mask: You multiply the FFT of the image by the mask to zero out high frequencies.

Apply inverse FFT: You compute the inverse FFT of the masked frequency domain representation to convert it back to the spatial domain.

Plot and save the image: You plot the original and the compressed image side by side for comparison and save the compressed image to disk.

This approach is a conceptual demonstration of how frequency domain manipulation can affect an image. The use of a circular mask to create a low-pass filter is a common technique for image smoothing or blurring, which can also act as a form of compression by reducing the image's high-frequency content.