Weighted Median Filter Exercise

Topic: The weighted median filter is a variation of the standard median filter that utilizes a kernel that contains weights in order to de-noise an image. These weights, if chosen properly, can incorporate time information in their structure. For example, it is a good idea to weigh the central pixels in the filter window more heavily that the others.

Exercise: Create a Python script file and perform the following tasks:

- Import OpenCV and NumPy libraries.
- Create a function that takes as input the size of the weighted median filter and creates its kernel.
- Create a function that takes as input an image and the weighted median kernel and performs weighted median filtering on the image. Then, it returns the filtered image. It should use 0-padding in order to prevent the creation of black borders in the image. You can add any extra parameters you desire.
- Read an image.
- Corrupt the image with any type of noise you desire.
- Apply weighted median filtering to the noise image.
- Finally, display the noise image alongside the filtered one.

Material for better understanding: https://asp-eurasipjournals.springeropen.com/articles/10.1186/s13634-017-0502-z