**IMAGE ENHANCEMENT AND NOISE REMOVAL USING BILATERAL FILTER**

**ABSTRACT**

In this project, we present the bilateral filter (BF) for sharpness enhancement and noise removal. A bilateral filter is an edge-preserving and noise reducing smoothing filter. The intensity value at each pixel in an image is replaced by a weighted average of intensity values from nearby pixels. This weight is based off a Gaussian distribution. Crucially the weights depend not only on Euclidean distance but also on the radiometric differences (differences in the range, e.g. color intensity). This preserves sharp edges by systematically looping through each pixel and according weights to the adjacent pixels accordingly.

Modified bilateral filter to performs both noise removal and sharpening by adding a high-pass filter to the conventional bilateral filter.