Compeng 3SK3

Project 3

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Here are some limitations to the linear regression-based demosaicing approach:

1. Limited color accuracy: Since each pixel only captures one color, the demosaicing process has to interpolate the missing colors based on neighboring pixels. This can lead to color inaccuracies in areas where there is high variation in color.
2. Limited detail preservation: The demosaicing process can introduce artifacts and blur, particularly in areas with fine details. This can result in loss of sharpness and detail compared to the original image.
3. High computational cost: The process of computing the coefficients for each patch can be computationally intensive, particularly for larger patch sizes or for high-resolution images. This can make the demosaicing process slow and impractical for real-time applications.
4. Limited performance in low-light conditions: In low-light conditions, the signal-to-noise ratio of the image can be low, which can make it difficult to accurately estimate the missing color values. This can lead to noise and color artifacts in the demosaiced image.
5. Limited performance for non-Bayer patterns: While the linear regression-based demosaicing algorithm is designed for the Bayer pattern, many other colour filter array patterns are used in modern cameras. The algorithm may not perform as well for these patterns or may require modifications to work effectively.