CIS 5810 – Fall 2024
Group 5 - Photography techniques
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1) Project idea

The main project idea is to mimic photographic techniques with still images, implemented in a dashboard with sliders for parameter adjustment and showing part of the algorithm used.

2) Project Pipeline

A) Literature review: Select in the literature what photographic techniques can be mimic with computer vision techniques. Some ideas are panning, High Dynamic Range (HDR) imaging, depth of field manipulation.
B) Implementation: Implement a photographic technique using python in google colab, using image processing libraries like OpenCV or Pillow.
C) Dashboard Creation: Show the results in a dashboard created using Streamlit.
D) Parameter Adjustment: add a slider to the dashboard to change a parameter and see the effect in the output image.
E) Algorithm Visualization: Show parts of the algorithms in the same dashboard and how it values changed by changing the values in the slider. For example, If the algorithm uses kernels, then we can show the matrix and give the option of changing the values in that matrix and see the response in the output image.
F) Algorithm Improvement: Implement other computer vision algorithms that improve the output image, such as adaptive blurring, edge detection or depth estimation, that probably will require the use of deep learning frameworks such as PyTorch or TensorFlow.

3) Project Baseline

The minimum results expected is a dashboard showing the results of a photographic technique over an image.

4) Initial experiments

The dashboard was created using the libraries OpenCV, Numpy, Streamlit and pandas. The code is at https://github.com/Francisco-hub-eng/cis5810_final/tree/master, and the dashboard is at https://cis5810final.streamlit.app/ .