On generating plausible RAW data

Currently, one of the main drawbacks of training neural networks is the need for data augmentation. This need provokes the generation of data using patterns and conversions that are not realistic; and that therefore hinder the results obtained.

In this project, we will improve on this problem. In particular, we aim at generating models for plausible data augmentation, i.e. to generate new images that are physically plausible given the input images.

To this end, given a standard data set already post-processed, we will look at generating a *plausible* version of this data set in RAW format. RAW format is the format in which the cameras capture the data, and that is previous to any color correction, compression, or other algorithms in the camera pipeline.

In this way, once we have the data set in RAW format, we will be able to generate different realistic augmentations by modifying the different processes in the camera imaging pipeline, such as illuminant estimation algorithms, color correction matrices, compression levels, etc.

This project is a collaboration with Prof. Michael Brown at York University.