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Bachelor's Thesis
Colour Transfer for Object Reconstructions

Transferring the colour statistic from one image to another has been investigated for decades as it is an important process in many applications, i.e. film post-production, colour correction in panoramic images and videos, film restoration, visual effects, and many more. On the other side, transferring colours between 3D models or between 2D images and 3D models is a new field of research which needs further investigations as 3D models are highly relevant in augmented and virtual reality (AR/VR) applications.

The goal of this thesis is to implement and compare existing colour transfer algorithms which are initially developed for images and apply them to self-created 3D reconstructions of everyday objects.

(a) 3D Reconstruction of a reflex camera using Artec Eva

(b) Image of an instant camera

(c) 3D object of (a) with the color statistic of (b)

Figure 1: The colour statistic of an image (b) is transferred to a 3D reconstruction (a) by applying a colour transfer algorithm

In detail, the following tasks have to be worked on:

- Creation of a 3D reconstruction dataset of real objects using the structured-light scanner Artec Eva
- Research on existing colour transfer algorithms
- Implementation of existing colour transfer algorithms in Python and their application to 3D reconstructions
- Analysis and evaluation of the implemented algorithms

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