

CHECK MY CHART – LIGHTWEIGHT, ROBUST AND REAL-TIME COLOR CHART TRACKING

Fraunhofer Institute for Integrated Circuits IIS

Executive Director
Prof. Dr.-Ing. Albert Heuberger

Am Wolfsmantel 33
91058 Erlangen, Germany
Phone +49 9131 776-0
Fax +49 9131 776-999
info@iis.fraunhofer.de

Contact
Electronic Imaging Department
Dr.-Ing. Jens-Uwe Garbas
Phone + 49 9131 776-5160
Fax +49 9131 776-5108
jens.garbas@iis.fraunhofer.de

www.iis.fraunhofer.de

The illumination of a scene highly influences color reproduction in images captured with digital cameras. Thus, accurate color reproduction requires colorimetric camera calibration for given illuminations. This is traditionally done during post-processing using a photo of a calibration chart in the scene.

Check My Chart, developed by Fraunhofer IIS, is an algorithm to detect and track color calibration charts in images and videos fast and robustly. It can be used for colorimetric calibration directly in the camera during image acquisition. This can greatly simplify workflows and prevent faults.

Region-Based Color Chart Tracking – Working Principle

A model of the chart is defined by patch geometries and reference colors. This model is projected into the acquired

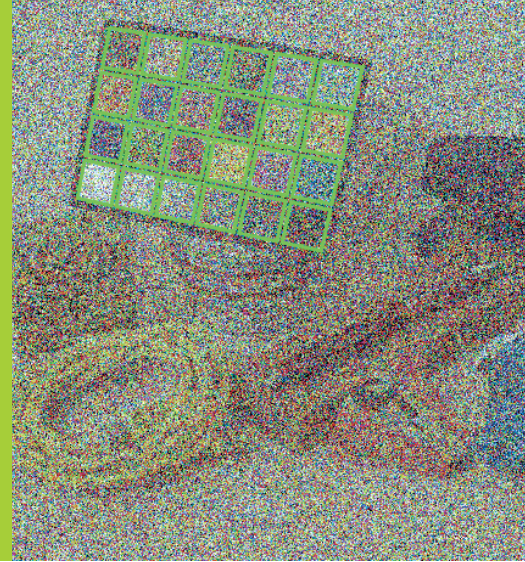
image by a parameterized projection.

An iterative optimization procedure adapts the model to the chart in the image.

The optimization is done by means of color statistics (mean and variance) inside the regions of the mapped model chart patches.

This has two main advantages:

- The used statistics can be extracted extremely efficient from an integral image representation (also known as summed area table) by only a few look-ups and operations. This allows real-time operation at very low complexity.
- The usage of image region statistics instead of edge, corner or other salient features from the image makes the algorithm extremely robust against image noise, blur and other typical distortions.



1

1 *Check My Chart finds the chart even in extremely noisy or blurry images*

Applications

Check My Chart can be used with objects that exhibit uniform regions. The information of the found color patches can be used to perform, e.g., color calibration, white-balancing and gain adjustments.

Due to its robustness and its low complexity it can be applied within conventional photo and video cameras during recording, e.g. for

- In-Camera color calibration
- Generation of meta data during recording
- Reproducible conditions for color grading applications – “Color Style Apps”

Availability

Check My Chart is available for Linux and Android. We would be glad to provide you a customized solution for your target platform and operating system. Please contact us.