Qiu Jueqin

COLOR SCIENCE · COMPUTATIONAL PHOTOGRAPHY · COMPUTER VISION

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Summary

Currently pursuing my Ph.D degree in Color & Imaging Lab of Zhejiang University, under the supervision of Prof. Haisong Xu. My research interests include the color reproduction based on the human vision system, and enhancing the performances of computer vision tasks by reducing the dependencies of devices and illuminations. Cooperated with corporations as the technical lead during my postgraduate period, being highly familiar with the digital image signal processing (ISP) pipeline in mobile devices. Proposed a novel ISP solution based on the camera spectral sensitivities estimation, which dramatically simplified the calibration for imaging devices in the industry.

Education

Sep 2014 – Jun 2019	PhD Candidate, College of Optic. Sci. and Engr.	*Zhejiang University, China*
Sep 2010 – Jun 2014	B.S., School of Instr. Sci. and Opto-Electr. Engr.	*Beihang University, China*

Projects

Applications of the Colorimetric Sensor in the ISP of Mobile Devices

ams Semiconductor, US

TECH LEAD — *Feb 2017 – Dec 2018*

- Developed a CNN-based AWB framework to improve the reliability of the illuminant estimation for extreme scenarios where the low-level based AWB algorithms perform poorly, with the use of ams TCS3430 sensors.
- Improved the color reproduction accuracy of images with flash.
- Dynamically controlled the brightness and chrominance of the display by monitoring the photometric and chromatic parameters in the environment.

Digital Image Signal Processing Pipeline in Mobile Devices

Rockchip Semiconductor, CN

TECH LEAD — *Oct 2015–Sep 2017*

- Devised a complete ISP solution from sensor's raw data to displayable output images, including modules of camera spectral sensitivity estimation, lens color shading correction, auto white-balancing, color correction, etc.
- The proposed ISP solution exceeded the average color reproduction performance in the industry (by the date of the test). Obj./subj. assesment (zh), Single-blind test (zh).

Color Correction for 3D Scanning Cameras

Shining 3D, CN

TECH LEAD — *May 2017 – Apr 2018*

- Proposed color correction techniques for [white light + RGB CMOS] and [color light + monochrome CMOS] two types of 3D scanning cameras.
- Significantly improved the color reproduction accuracy. Demo video.

Study on Image Quality of OLED HDR Displays

LG Display, KR

MAJOR PARTICIPANT — *Jul 2016 – May 2017*

- Assessed the image quality and image attributes for OLED, IPS LCD and VA LCD TVs.
- The results of visual experiments indicated that the OLED TV is superior to LED TVs in blackness, contrast, low-gradation, and artifacts, and has stronger image quality user preference.

Study on Color Volume of HDR Displays

LG Display, KR

TECH ADVISOR — *Aug 2017 – May 2018*

- Originated a new color quality volume metric to remedy the poor correlation of the original $L^*a^*b^*$ metric between the color quality volume size and the perceptual image quality.

Publications

Color Constancy by Reweighting Image Feature Maps — *IEEE Trans. Image Proc.*, *Under Review*

Image Quality Degradation of Object-Color Metamer Mismatching in Digital Camera Color Reproduction — *Applied Optics*, *Apr 2018*

Camera Response Prediction for Various Capture Settings Using the Spectral Sensitivity and Crosstalk Model — *Applied Optics*, *Oct 2016*

Robust Color Correction Strategy Based on Chromatic Adaptation Model — *4th ACA Conference*, *Oct 2018*

Comparison of Object-Color and Illumination Metamerism for Digital Image Color Correction — *13th AIC Congress*, *Oct 2017*

Investigation of Impacting Factors on Camera Calibration for Spectral Sensitivity Estimation — *3rd Conference of Asia Color Association*, *May 2016*

A Highly Tolerant Color Correction Approach for Digital Cameras — *Patent*, *Apr 2018*
Under Review

A Color Adaptation Model Based auto White-Balance Approach for Digital Cameras — *Patent*, *Oct 2017*
Published, ZL 2017 1 0442492.3

An Illuminant-Adaptive Lens Color Shading Correction Approach for Digital Cameras — *Patent*, *Sep 2016*
Licensed, ZL 2016 1 0334669.3

Skills

Language: CET6 (521)

Good at Python 2/3, MATLAB

Capable of: TensorFlow, PyTorch, OpenCV, LaTeX, HTML/CSS, Autodesk Inventor

Honors

2016 – 2017	Outstanding Postgraduate Student
	Merit Postgraduate Student
2015 – 2016	National Scholarship for Postgraduate Students
	Merit Postgraduate Student
2014 – 2015	National Second Prize of the Challenge Cup