Multispectral colormapping using penalized least square regression - DTU Orbit
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The authors propose a novel method to map a multispectral image into the device independent color space CIE-XYZ. This method provides a way to visualize multispectral images by predicting color values from spectral values while maintaining interpretability and is tested on a light emitting diode based multispectral system with a total of 11 channels in the visible area. To obtain interpretable models, the method estimates the projection coefficients with regard to their neighbors as well as the target. This results in relatively smooth coefficient curves which are correlated with the CIE-XYZ color matching functions. The target of the regression is a well known color chart, and the models are validated using leave one out cross validation in order to maintain best possible generalization ability. The authors compare the method with a direct linear regression and see that the interpretability improves significantly but comes at the cost of slightly worse predictability.

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