

# A Dataset of Flash and Ambient Illumination Pairs from the Crowd

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**Abstract.** Illumination is a critical element of photography and is essential for many computer vision tasks. Flash light is unique in the sense that it is a widely available tool for easily manipulating the scene illumination. We present a dataset of thousands of ambient and flash illumination pairs to enable studying flash photography and other applications that can benefit from having separate illuminations. Different than the typical use of crowdsourcing in generating computer vision datasets, we make use of the crowd to directly take the photographs that make up our dataset. As a result, our dataset covers a wide variety of scenes captured by many casual photographers. We detail the advantages and challenges of our approach to crowdsourcing as well as the computational effort to generate completely separate flash illuminations from the ambient light in an uncontrolled setup. We present a brief examination of illumination decomposition, a challenging and underconstrained problem in flash photography, to demonstrate the use of our dataset in a data-driven approach.

**Keywords:** flash photography · dataset collection · crowdsourcing · illumination decomposition

## 1 Introduction

Crowdsourcing has been a driving force for computer vision datasets especially with the rise of data-driven approaches. The typical use of crowdsourcing in this field has been obtaining answers to high-level questions about photographs [7] or obtaining ground truth annotations [21] for simple tasks such as segmentation in a scalable and economical manner. However, commonplace strategies that rely on user interaction do not apply to scenarios where complex physical processes are involved, such as flash/no-flash, short/long exposure, high/low dynamic range, or shallow/deep depth of field. With the wide availability and high quality of current mobile cameras, crowdsourcing has a larger potential that includes the collection































