

# Context-aware Clustering and Assessment of Photo Collections

## Supplementary Materials

### Abstract

To ensure that all important moments of an event are represented and that challenging scenes are correctly captured, both amateur and professional photographers often opt for taking large quantities of photographs. As such, they are often faced with the tedious task of organizing large collections and selecting the best images among similar variants. Automatic methods assisting with this task are based on independent assessment approaches, evaluating each image apart from other images in the collection. However, the overall quality of photo collections can largely vary due to user skills and other factors. In this work, we explore the possibility of context-aware image quality assessment, where the photo context is defined using a clustering approach, and statistics of both the extracted context and the entire photo collection are used to guide identification of low-quality photos. We demonstrate that our method is able to flexibly adapt to the nature of processed albums and to facilitate the task of image selection in diverse scenarios.

## 1 Collections

Five photo collections were used in our analysis. A description of the five collections is given in Table 1.

To demonstrate both the organization of collections based on our clustering approach as well as the resulting labeling, we have prepared a web-based representation, which can be accessed from the file *SupplementaryMaterials.html*. Please note that due to the size limitations, only the reduced-resolution images are available in this version of supplementary materials. The version with full-size images that were used for analysis can be accessed at the following location:

[https://www.dropbox.com/s/uf9t9t0r3hml4zs/ContextAssessment\\_SupplementaryMaterials\\_FullSize.zip](https://www.dropbox.com/s/uf9t9t0r3hml4zs/ContextAssessment_SupplementaryMaterials_FullSize.zip)  
Please note that this link can be accessed anonymously.

## 2 Collection Organization and Labeling

The organized photo collections in our web-based representation use colored borders to indicate different levels of clustering and icons below each photograph to indicate the final label, as decided by our framework.

An explanation of the notation used in our web-based representation is given in Figure 1.

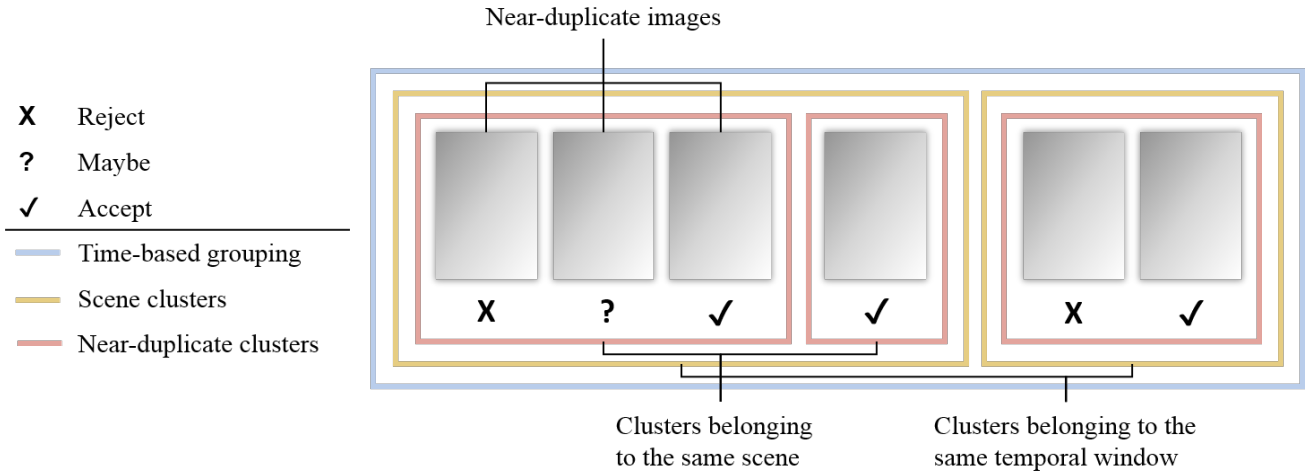


Figure 1: Symbols and notation used in our web-based representation and organization for photo collections.

	Collection Name	Representative Image	Description
1	Travel Collection		Good quality photographs covering a particular trip. Outdoors and portrait images.
2	Wedding Ceremony		Photographs from a wedding ceremony. Photos taken indoor under low light condtions, often exhibiting blur issues.
3	Professional Photo Session		Photos from a professional photo shoot. Good quality photographs, representing a small number of different scenes. Many near-duplicate photos present.
4	Sport event		Sport event coverage (volleyball match). Contains multiple pictures with motion blur.
5	Halloween party		Halloween party collection. Presents large number of blurred photos, represented by out-of-focus and motion blurred shots

Table 1: Photo collections used in our analysis.