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1 TESTING SHAPES

The 73 testing shapes are shown in Fig. 1. The first 62 shapes are extracted from MPEG-7 Core Experiment CE-Shape-1 Test Set [13]. The remaining 11 shapes are added by us.

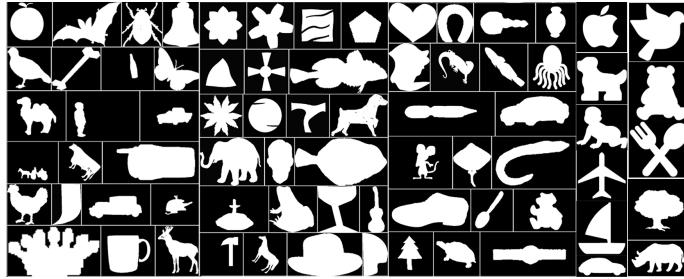


Fig. 1: The shapes that are used in our experiments.

2 IMAGE COLLECTIONS

The six image collections we used in quantitative evaluation are shown in Fig. 2 along with some sample images. All of them are from AIC [35] Evaluation dataset.

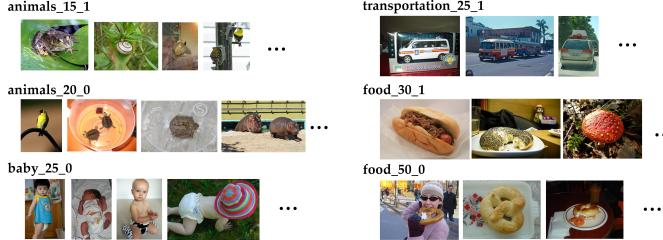


Fig. 2: The image collections that are used in our experiments.

3 ADDITIONAL INFORMATION ON THE USER STUDIES

We summarize the two user studies in Table 1. The user interface we used to conduct the first user study is illustrated in Fig 3. It can be seen that two results from different methods, i.e. our method on the left and Shape Collage on the right, are generated using the same input shape and image collection. When designing this user study, we pay attention to ensuring that the order of the appearance of the image collage is randomized, i.e. the results of our method are not always on the left, and the overall sizes are as similar as possible. For the second user study, an example is demonstrated in Fig 4. We found that how the target objects are cropped can greatly affect the retrieval time because different methods crop the objects differently. Hence, we pay attention to making sure the target object images are tightly cropped so that it

is not biased toward any particular method. Finally, we present all the cases used in the user studies in Fig 5.

Table 1: User Study Tasks

ID	Format	# of Questions	Task description
1	Single choice	16	Select the one image collage that is more visually pleasing than the other option.
2	Measuring time	16	Users are asked to locate four objects in that collage.

Which of the following image collage is more visually appealing?

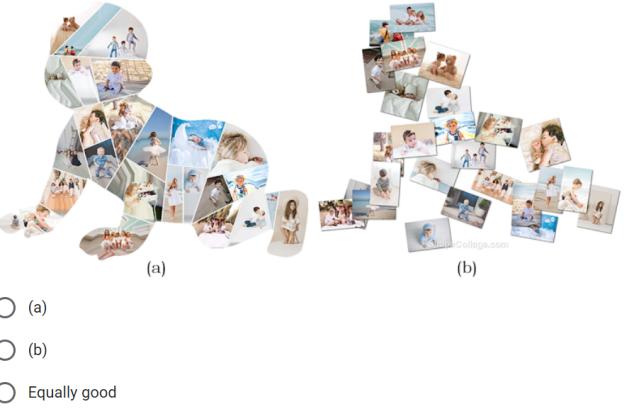


Fig. 3: User interface of the first user study.

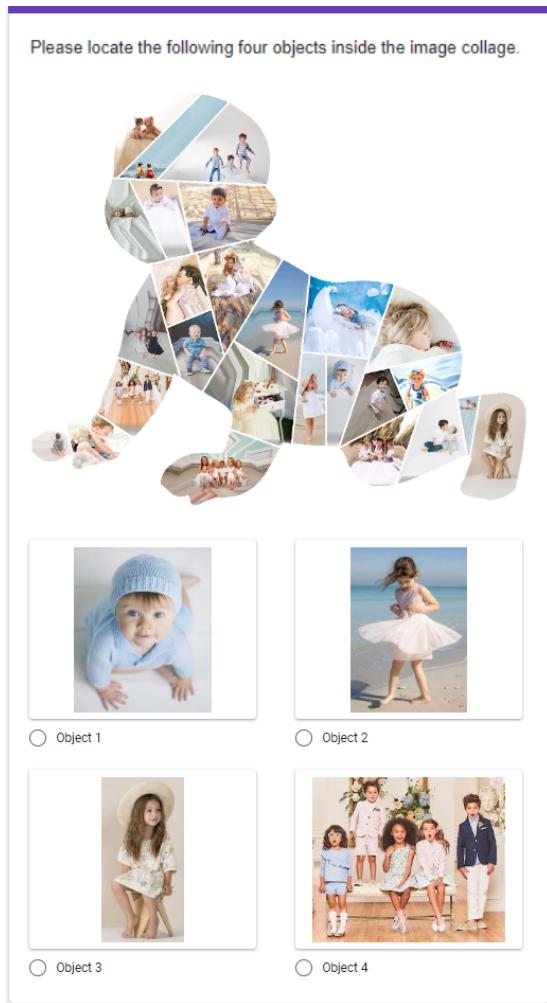


Fig. 4: User interface of the second user study.



Fig. 5: All the results used in the user study.