

SHape REtrieval Contest (SHREC) 2008

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1 INTRODUCTION

3D media retrieval is overlooked in most commercial search engines, while at the same time it is expected to represent a huge amount of traffic and data stored in the Internet. Indeed, “geometry is posed to become the fourth wave of digital-multimedia communication”, where the first three waves were sound in the 70’s, images in the 80’s, and video in the 90’s [1]. Recent advances in technology have made available cost-effective scanning devices that could not even be imagined a decade ago. It is now possible to acquire 3D data of a physical object in a few seconds and produce a digital model of its geometry that can be easily shared on the Internet. On the other hand, most PCs connected to the Internet are nowadays equipped with high-performance 3D graphics hardware, that support rendering, interaction and processing capabilities from home environments to enterprise scenarios.

TREC, the Text Retrieval Conference [2], is a series of workshops on large scale evaluation of text retrieval technology organized since 1992, which has had a major impact on the text retrieval community. Following the successful example of TREC, a number of other competitions have been organized, for example: TRECVID, the TREC Video Retrieval Evaluation [3], FRGC, the Face recognition Grand Challenge [4], VOC, the Visual Object Classes challenge [5], MIREX, the Music Information Retrieval Evaluation Exchange [6], INEX, the Initiative for the Evaluation of XML [7], and FVC, the Fingerprint Verification Competition [8].

Since 2006 the 3D Shape Retrieval Contest SHREC has been organized. The general objective is to evaluate the effectiveness of 3D-shape retrieval algorithms. For more information about the organization, see the SHREC home page at <http://www.aimatshape.net/event/SHREC/>. The first year there was only one track, but last year and this year there are multiple tracks. For the proceedings of the 2006 and 2007 events, see [9, 10].

Track organizers take care of the following aspects:

- The particular task. One might ask for a complete or limited ranking, a classification, etc.
- The collection. Is the test set collected or generated. Are there copyright issues? Will it be made public? Is there a classification of the models?
- The queries. How are the queries determined? Are the query models from the collection or new models, or is it just a verbal description, etc.
- The ground truth. Is there a ground truth, is there a relevance scale (highly relevant, marginally relevant, ...), how and when is it determined (based on classification, visual inspection, ...), etc.

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- The evaluation method. Which performance measure will be used for the evaluation (precision, recall, nearest neighbor, k-th tier, average dynamic recall, normalized cumulated gain, etc.).
- The procedural aspects. Does every participant perform the queries, or is that done in a central place? Who does the performance assessment? When are test set and queries made available?

2 TRACKS

Five tracks were organized this year:

- Stability on watertight models. For the track report, see [11].
- Classification of watertight models. For the track report, see [12].
- CAD models. For the track report, see [13].
- Generic models. For the track report see [14].
- 3D face scans. For the track report see [15].

This year there are 17 participants, spread over five tracks, [16] [17] [18] [19] [20] [21] [22] [23] [24] [25] [26] [27] [28] [29] [30] [31] [32].

This is more than the previous years, even though some tracks received a higher number of initial registrations, some registered parties did not submit results. We conjecture that participants generally need more time for preparation in order to inspect data formats etc.

Some groups participated in more than one track with the same method. It is interesting to see their relative performance.

Note that none of these paper contributions are peer reviewed. Therefore, their titles all start with SHape REtrieval Contest, or SHREC, in order to set them clearly apart from the other contributions in these SMI proceedings.

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