

# Synthetic Dynamic Texture Segmentation Database

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This is the synthetic dynamic texture database used in “Modeling, Clustering, and Segmenting Video with Mixtures of Dynamic Textures” [1] to quantitatively test several dynamic texture segmentation algorithms.

## 1 Segmentation Database

The database contains 299 synthetic sequences, which are generated from a common ground-truth template for  $K = \{2, 3, 4\}$ . The segments were randomly selected from a set of 12 textures, which included grass, sea, boiling water, moving escalator, fire, steam, water, and plants. Most of these textures are from the MIT temporal texture database [2] and the UCLA dynamic texture database [3]. All videos are 8-bit grayscale, with dimensions  $160 \times 110 \times 60$  at 30 fps. The textures are separated into three directories: `synthdb_2K`, `synthdb_3K`, and `synthdb_4K`, which correspond to 2, 3, or 4 ground-truth segments. Each directory contains the following:

- `texture_XXX.y/` - directories containing each video texture as `.png` files.
- `texture_groundtruth.png` - the common ground-truth segmentation.
- `init1.png` - the initial contour provided to the segmentation algorithms (when necessary).

## 2 Experimental Protocol

In [1], the algorithms are run on the entire database with fixed parameters (except for the model order,  $n$ ). Performance is evaluated with the Rand index [4] between segmentation and ground-truth. Intuitively, the Rand index corresponds to the probability of pair-wise agreement between the clustering and the ground-truth, i.e. the probability that the assignment of any two items will be correct with respect to each other (in the same cluster, or in different clusters). The Rand index can be computed with the provided MATLAB function `compute_rand.m`. Please refer to [1] for more information on the experimental protocol. Images of the segmentation results from [1] are available at [5].

## References

- [1] A. B. Chan and N. Vasconcelos, “Modeling, Clustering, and Segmenting Video with Mixtures of Dynamic Textures,” *IEEE Trans. on Pattern Analysis and Machine Intelligence*, vol. 30(5), pp. 909-926, May 2008.
- [2] M. Szummer and R. Picard, “Temporal texture modeling”, In *IEEE Conf. on Image Proc.*, Vol. 3, pp. 823-6, 1996.
- [3] P. Saisan, G. Doretto, Y. Wu, and S. Soatto, “Dynamic texture recognition,” in *CVPR*, vol. 2, 2001, pp. 58–63.
- [4] L. Hubert and P. Arabie, “Comparing partitions,” *Journal of Classification*, vol. 2, pp. 193–218, 1985.
- [5] <http://www.svcl.ucsd.edu/projects/motiondytex>