

Dynamic Scene Classification: Learning Motion Descriptors with Slow Features Analysis

SUPPLEMENTARY MATERIAL

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Figure 1 gives the confusion matrices for the Yupenn data set [1] and the Maryland data set [2]. The classification scores being relatively high, only a few confusion patterns seem to emerge. These confusions are quite natural for a system based on motion features without the full context, background knowledge and other perception modalities a human would have.

For the Yupenn data set, the two categories which get the highest confusion rate between them are the Snowing category and the Rushing river category. By looking at the videos this confusion is understandable from a pure motion point of view. Indeed, both categories have a downward particle-like motion. In the case of the Rushing river category the light reflecting on the turbulent white water streaming down can create the appearance of particles moving down the screen. This particle-like motion is quite obvious for the snowing category.

For the Maryland data set, Volcano Eruption and Tornado are the two categories with the highest rate of confusion between them. By looking at the videos, both categories are characterized by large columns of either smoke and fire or dust moving up the sky.

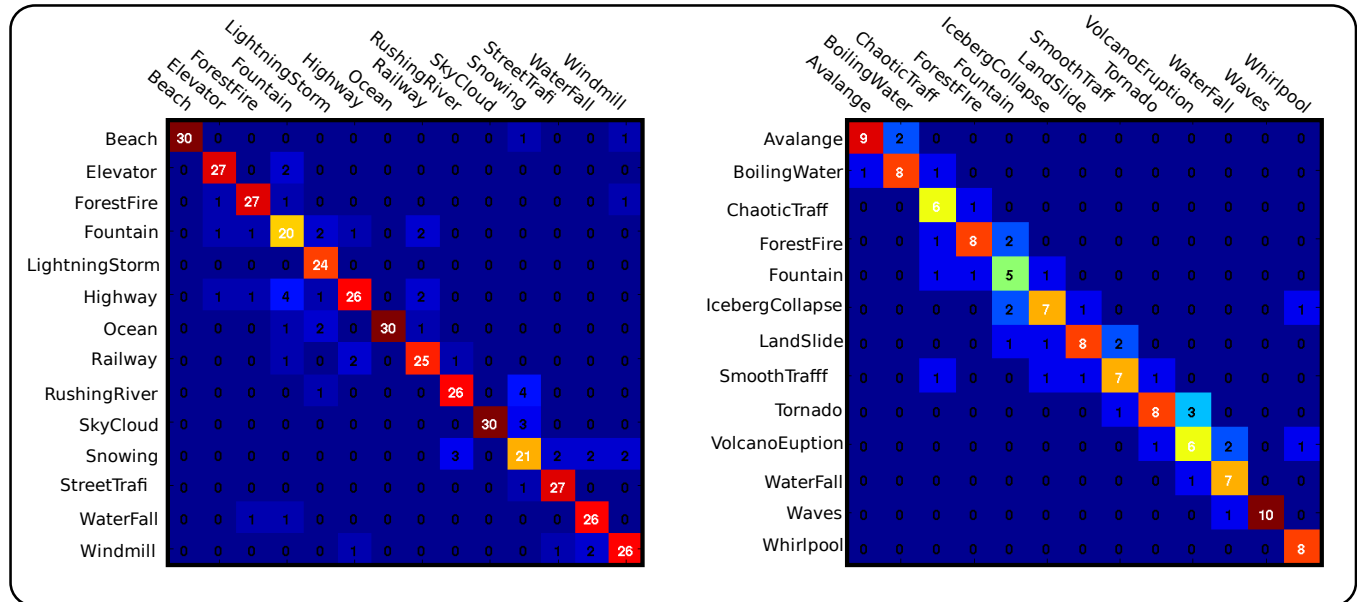


Figure 1. Confusion matrix for the Yupenn data set (left) and the Maryland data set (right)

References

- [1] K. G. Derpanis, M. Lecce, K. Daniilidis, and R. P. Wildes. Dynamic scene understanding: The role of orientation features in space and time in scene classification. In *CVPR*, pages 1306–1313, 2012. 1
- [2] N. Shroff, P. K. Turaga, and R. Chellappa. Moving vistas: Exploiting motion for describing scenes. In *CVPR*, pages 1911–1918, 2010. 1