On-line Multi-cues Learning

LUO Jie[1,2], Francesco Orabona[1] and Barbara Caputo[1,2]

[1] IDIAP Research Institute, Martigny, Switzerland
[2] Swiss Federal Institute of Technology in Lausanne (EPFL), Lausanne, Switzerland
{jluo,forabona,bcaputo}@idiap.ch

Current research on artificial recognition system, such as a vision-based localization systems, faces several issues, of which robustness and adaptability are the most challenging. The system should be robust to variations and unexpected events when operating in open environments. Multi-cues guarantees independent, diverse and information-rich sensory inputs, which makes it possible to achieve robust performance in varied, unconstrained settings. Moreover, as the concepts drift or new information becomes available, the system needs to update its internal representation. This calls for an on-line learning method able to achieve high accuracy while using limited computational power.

Recent researches have clearly shown the powerful of discriminative classifiers for cognitive systems. In our previous efforts, we modified the incremental extensions of SVM [1, 2], which reduced the memory growth during the learning process and preserved the performance. Recently, we proposed a new online learning algorithm [3] that keeps the memory always bounded. In this work, we propose to use online algorithm to learn the classifiers as well as the optimal integration of different cues, so to achieve a robust and adaptive system. This also solves the problem of the expansion of the input space and memory requirement when using multi-cues inputs.

References

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