学术论文

鉴别性多维序列特征降维

苏冰，丁晓青，王浩，吴郢

“Discriminative Dimensionality Reduction for Multi-Dimensional Sequences”, IEEE Trans. on Pattern Analysis and Machine Intelligence, 2018, 40(1), 77-91.

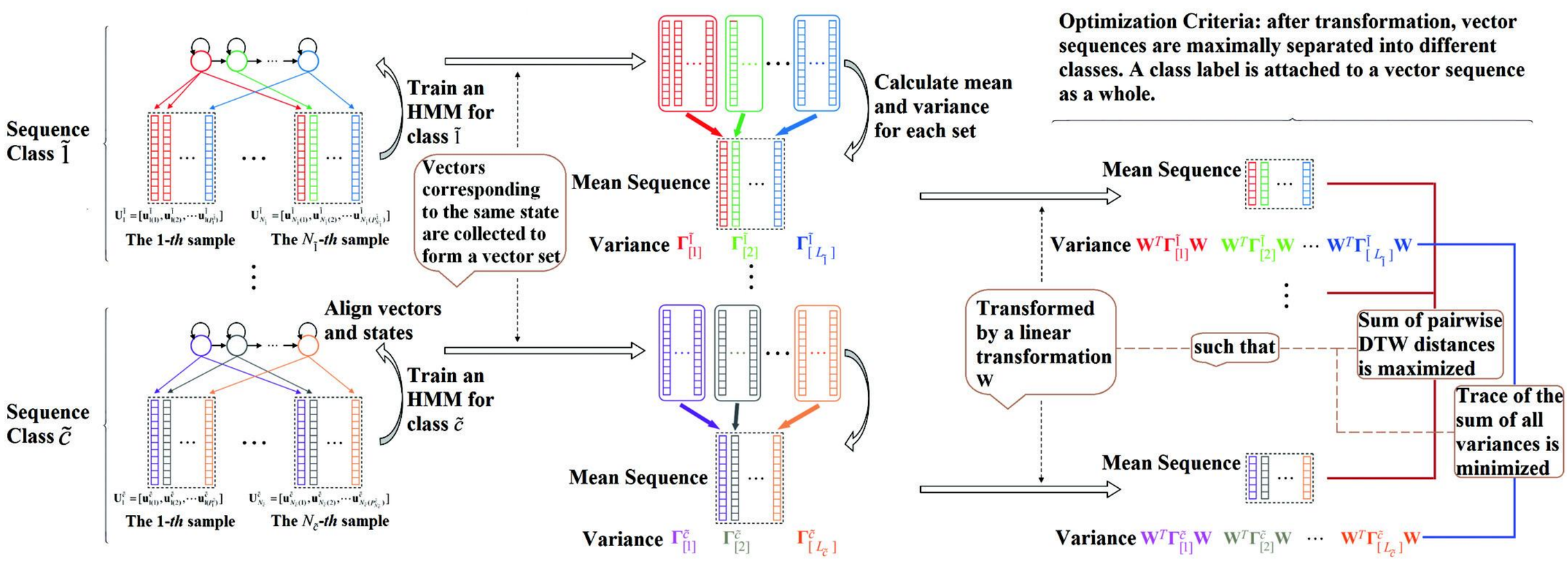
苏冰，13661284169，subingats@gmail.com

Motivation

- The targets of interest are represented with vector sequences in many applications. The representations of sequences matters. Low-dimensional and discriminative representations benefit.
- Dimensionality reduction for vectors in sequences is challenging because labels are attached to sequences as a whole, the vectors are not independent, and sequences have different lengths.

Method

- **LSDA:** transform the whole sequences with high-dimensional vectors into sequences with lower dimensional vectors, such that sequence classes get better separated.
- **Sequence statistics:** Model(HMM)-based approach
- **Holistic discrimination:** maximizing the statistics-based separation; employing DTW to measure the distance between two classes
- **Optimization:** space-invariant assumption of alignments



Experimental results

- Experiments on 3D-action recognition, online-character recognition, offline Arabic printed/handwriting recognition show the effectiveness of the proposed LSDA.