

Accepted Manuscript

A Multi-Task-Based Classification Framework For Multi-Instance Distance Metric Learning

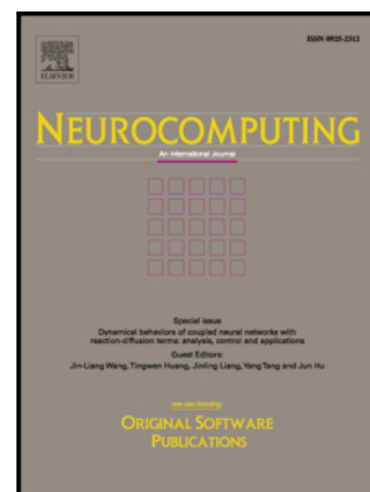
Zhifeng Hao, Yibang Ruan, Yanshan Xiao, Bo Liu

PII: S0925-2312(17)31495-9
DOI: [10.1016/j.neucom.2017.09.011](https://doi.org/10.1016/j.neucom.2017.09.011)
Reference: NEUCOM 18866

To appear in: *Neurocomputing*

Received date: 3 November 2016
Revised date: 14 July 2017
Accepted date: 1 September 2017

Please cite this article as: Zhifeng Hao, Yibang Ruan, Yanshan Xiao, Bo Liu, A Multi-Task-Based Classification Framework For Multi-Instance Distance Metric Learning, *Neurocomputing* (2017), doi: [10.1016/j.neucom.2017.09.011](https://doi.org/10.1016/j.neucom.2017.09.011)



This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

A Multi-Task-Based Classification Framework For Multi-Instance Distance Metric Learning

Zhifeng Hao^a, Yibang Ruan^a, Yanshan Xiao^{a,*}, Bo Liu^b

^a*School of Computers, Guangdong University of Technology, Guangzhou 510006, China*

^b*School of Automation, Guangdong University of Technology, Guangzhou 510006, China*

Abstract

In traditional multiple-instance learning (MIL), the Euclidean distance is used to measure the distance of data. Different from traditional MIL, multi-instance distance metric learning (MIDM) is proposed by learning an appropriate distance metric for multi-instance data, which has been demonstrated to improve the MIL performance. However, most of the existing work considers MIDM as a single-task learning problem, and focuses on single-task MIDM. The multi-task MIDM has not been explicitly addressed. In real-world MIDM applications, the amount of labeled training data may be scarce. If we train a MIDM classifier by using only a scarce amount of labeled data, the performance of the learnt MIDM classifier may be limited. Instead of learning each task independently, learning these related tasks simultaneously can explicitly improve the classification performance. In this paper, we propose a novel multi-task-based classification framework for MIDM (MT-MIDM), which is capable of constructing a more accurate classifier on each MIDM task by learning multiple tasks simultaneously and incorporating the classification information shared among the tasks into boosting the classification accuracy. Extensive experiments have showed that the proposed MT-MIDM method outperforms the single-task MIDM methods.

Keywords: multi-task learning, multi-instance distance metric learning

*Corresponding author

Email addresses: zfhao@fosu.edu.cn (Zhifeng Hao), ruanyibang@gmail.com (Yibang Ruan), xiaoyanshan@189.cn (Yanshan Xiao), csbliu@189.cn (Bo Liu)

Download English Version:

<https://daneshyari.com/en/article/6864862>

Download Persian Version:

<https://daneshyari.com/article/6864862>

[Daneshyari.com](https://daneshyari.com)