Shiming Chen

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PERSONAL INFORMATION

Name: Shiming Chen   **Gender**: Male   **Birthdate**: January 15, 1992
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RESEARCH INTERESTS

Computer vision and machine learning, and in particular:

- High-Order Representation

- Generative Model and Learning

- Content-Based Image Retrieval(CBIR)

EDUCATION

- 2019.9-Present
  PhD: School of Electronic Information and Communication, Huazhong University of Science and Technology, China.
  Advisor: Professor Xinge You

- 2016.9-2019.6
  M.D. degree: School of Computer Science and Technology, Guizhou University, China.
  Advisor: Professor Yisong Wang

- 2012.9-2016.7
  B.Sc. degree: School of Information and Computing Science, Zunyi Medical University, China.
  Advisor: Professor Xiahua Wang

PUBLICATIONS

- **Shiming Chen**, Peng Zhang, Xinge You, Qinmu Peng, Xin Liu, Zehong Cao and Dacheng Tao. Kernelized Similarity Learning and Embedding for Dynamic Texture Synthesis, *IEEE Transactions on Image Processing*, 2019. (Submitted)

- **Shiming Chen**, Yisong Wang, Chin-Teng Lin, Weiping Ding and Zehong Cao. Semi-supervised Feature Learning For Improving Writer Identification, *Information Sciences*, 482 (2019) 156-170. doi:https://doi.org/10.1016/j.ins.2019.01.024.(**SCI/EI, IF=5.524, CCF-B**)

- **Shiming Chen** and Yisong Wang. A Robust Off-line Writer Identification Method, *ACTA AUTOMATICA SINICA*, 2020, 46(1): 108-116 .doi:https://doi.org/10.16383/j.aas.c180441(In Chinese, **EI**, **CAA-A**, **CCF-A**)

PROFESSIONAL EXPERIENCES

- 2019.9-2019.12 **Kernelized Similarity Learning and Embedding for Dynamic Texture Synthesis**. Dynamic texture (DT) exhibits statistical stationarity in the spatial domain and stochastic repetitiveness in the temporal dimension, indicating that different frames of DT possess high similarity correlation that is a critical prior knowledge. However, existing methods cannot effectively learn a promising synthesis model for high-dimensional DT from a small number of training data. In this paper, we propose a novel DT synthesis method, which makes full use of similarity prior knowledge to address this issue. Our method based on the proposed kernel similarity embedding, which not only can mitigate the high-dimensionality and small sample issues, but also has the advantage of modelling nonlinear feature relationship. Specifically, we first raise two hypotheses that are essential for DT model to generate new frames using similarity correlation. Then, we integrate kernel learning and extreme learning machine into a unified synthesis model to learn kernel similarity embedding for representing DT. Extensive experiments on DT videos collected from internet and two benchmark datasets, i.e., Gatech Graphcut Textures and Dyntex, demonstrate that the learned kernel similarity embedding effectively exhibits the discriminative representation for DT. Hence our method is capable of preserving long-term temporal continuity of the synthesized DT sequences with excellent sustainability and generalization. We also show that our method effectively generates realistic DT videos with fast speed and low computation, compared with the state-of-the-art methods. The code and more synthesis videos are available at project homepage: https://shiming-chen.github.io/Similarity-page/Similarit.html.

- 2018.5-2018.10 **Semi-Supervised Feature Learning for Improving Writer Identification**. Data augmentation is typically used by supervised learning approaches for offline writer identification, but such approaches require a mass of extra training data and potentially lead to overfitting errors. In this work, a semi-supervised feature learning pipeline was proposed to improve the performance of writer identification by training with extra unlabeled data and the original labeled data simultaneously. Specifically, we proposed a weighted label smoothing regularization (WLSR) method for data augmentation, which assigned the weighted uniform label distribution to the extra unlabeled data. The WLSR method could regularize the convolutional neural network (CNN) baseline to allow more discriminative features to be learned to represent the properties of different writing styles.The experimental results on well-known benchmark datasets (ICDAR2013 and CVL) showed that the proposed semi-supervised feature learning approach significantly improves the baseline measurement and perform competitively with existing writer identification approaches. This work provide new insights into offline writer identification. The implimentation is available at:https://github.com/shiming-chen/Writer-Identification-WLSR.

- 2017.12-2018.5 **A Robust Off-line Writer Identification Method**. The current well-known off-line writer identification approaches are based on local feature extraction. However, they rely heavily on data augmentation and global encoding for writer retrieval, and need a great number of handwritten contents for writer recognition. I proposes a new off-line writer identification method (named DLS-CNN) to address this issue. Specifically, DLS-CNN

combines document line segmentation in terms of statistic and deep convolutional neural network. The implimentation is available at:https://github.com/shiming-chen/DLS-CNN.

PROFESSIONAL SERVICE

- 2018.10-Present
  Reviewer for: *IEEE Transactions on Multimedia*; *IEEE Access*; *Multimedia Tools and Applications.*

PROFESSIONAL SKILLS

- Programming Language: Python(proficient), Matlab(familar), C++(familar), C#(Familar)

- Deep Learning Frameworks: Tensorflow(proficient), Matconvnet(proficient), Pytorch(familar)

AWARDS AND CERTIFICATES

- CET 6 (471)

- 2014 China Undergraduate Mathematical Modeling Contest (Grade 2)

- 2017 Academic Scholarship (Grade 3)

- 2018 Special Grade Scholarship of Guizhou University