Xiaobin Liu (刘晓滨)

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BRIEF BIO

I received the B.E. degree from Nankai University in 2016. I am currently a fifth year Ph.D. student at Peking University. My research interests include deep learning and computer vision, with focus on image retrieval, vehicle and person re-identification, and deep metric learning.

EDUCATION BACKGROUND

Peking University, Beijing, China 2016.09-present
Ph.D. Student in Computer Applied Technology, supervised by Shiliang Zhang

Nankai University, Tianjin, China 2012.09-2016.06
Bachelor of Engineering in Artificial Science and Technology

PUBLICATIONS

1. **Xiaobin Liu**, Shiliang Zhang. Who is closer: A Computational Model for Domain Gap Evaluation. Under reviewing.
   Propose a computational model for domain gap evaluation.
   Also show the guidance on unsupervised learning of our model.
2. **Xiaobin Liu**, Shiliang Zhang. Domain Adaptive Person Re-Identification via Coupling Optimization. ACM MM, 2020, **Oral**. (CCF A)
   Propose a domain-invariant mapping method to map both labeled and unlabeled images into a shared feature space for effective knowledge transfer.
   Propose a global-local optimization method that involves more samples in optimization for effective model training against noisy predicted label.
3. **Xiaobin Liu**, Shiliang Zhang, Xiaoyu Wang, Richang Hong, Qi Tian. Group-Group Loss Based Global-Regional Feature Learning for Vehicle Re-Identification. IEEE Transactions on Image Processing, vol. 29, pp. 2638-2652, 2020. (SCI, CCF A, IF: 9.34)
   Propose a group-group loss that optimizes intra- and inter- distance simultaneously for effective metric learning.
   Propose a global-regional feature extraction method with dynamic predicted regional weights for detailed information extraction.
4. **Xiaobin Liu**, Shiliang Zhang, Tiejun Huang, Qi Tian. E2BoWs: An End-to-End Bag-of-Words Model via Deep Convolutional Neural Network for Image Retrieval. Neurocomputing, vol. 395, pp. 188-198, 2020. (SCI, IF: 4.438)
   Propose a bag-of-words layer in CNN to extract semantic visual words from images for semantic image retrieval.
   Propose a thresholding layer to adaptively filter visual words to ensure the time and memory efficiency.

5. **Xiaobin Liu**, Shiliang Zhang, Ming Yang. Self-Guided Hash Coding for Large-Scale Person Re-Identification. IEEE MIPR, 2019, **Oral**. (Acceptance rate: **19.3%**)
   Propose a self-guided algorithm to compromise pseudo images as hard samples to alleviate the shortage of labeled samples.
   Propose a novel training strategy to learn compact binary codes for efficient ReID.
6. **Xiaobin Liu**, Shiliang Zhang, Qingming Huang, Wen Gao. RAM: A Region-Aware Deep Model for Vehicle Re-Identification. IEEE ICME, 2018.
   Propose a region-aware model to combine regional features with global features.
   Propose an attribute branch to extract attribute features to enhance the robustness.
7. **Xiaobin Liu**, Shiliang Zhang, Tiejun Huang, Qi Tian. E2BoWs: An End-to-End Bag-of-Words Model via Deep Convolutional Neural Network. China MM, 2017.
8. Jianzhong He, **Xiaobin Liu**, Shiliang Zhang. EAGER: Edge-Aided imaGe understanding System. ACM ICMR, 2019.
9. Shangzhi Teng, **Xiaobin Liu**, Shiliang Zhang, Qingming Huang. SCAN: Spatial and Channel Attention Network for Vehicle Re-Identification. PCM, 2018.
10. Longhui Wei，**Xiaobin Liu**, Jianing Li, Shiliang Zhang. VP-ReID: Vehicle and Person Re-Identification System. ACM ICMR, 2018.

PATENTS

1. Shiliang Zhang, Qi Tian, Wen Gao, **Xiaobin Liu**. An Algorithm and System for Vehicle Re-Identification. CN Patent Number: 201711395760.7.
2. Shiliang Zhang, **Xiaobin Liu**. An algorithm for domain adaptive person Re-Identification based on Coupling Optimization. Patent Pending.

APPLICATION SYSTEMS

1. EAGER: Edge-Aided imaGe understanding System. Shown in ACM ICMR 2019.
2. VP-ReID: Vehicle and Person Re-Identification System. Shown in ACM ICMR 2018.
3. Large-Scale Retrieval System for Person and Vehicle Images. Shown in ChinaMM 2017.

AWARDS

1. Special Academic Scholarship, Peking University, 2020.
2. Outstanding member of the Communist Youth League of Peking University, 2020.
3. Special Academic Scholarship, Peking University, 2019.
4. Special Academic Scholarship, Peking University, 2018.
5. Excellence Talents Scholarship, Cooperative Medianet Innovation Center, 2018. (Among top 5 in 2nd-year Ph.D. students in National Engineering Laboratory for Video Technology.)

ACADEMIC SERVICES

I am reviewer of: IEEE T-IP, IEEE T-VT, IEEE T-CSVT, IEEE T-ITS, IEEE JBHI, IET-CVI, Neurocomputing, AAAI 2020, ISCAS 2020, VCIP 2020.

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计算机应用技术 博士研究生
研究方向：图像检索，车辆和行人再识别，度量学习
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教育经历

2016.09-至今 北京大学计算机应用技术
博士研究生 导师：张史梁

2012.09-2016.06 南开大学 智能科学与技术
学士学位

发表论文

1. **Xiaobin Liu**, Shiliang Zhang. Who is closer: A Computational Model for Domain Gap Evaluation. Under reviewing.
   提出一个用于衡量数据域距离的可计算模型。
   实验证明数据域距度量对于无监督学习具有指导作用。

2. **Xiaobin Liu**, Shiliang Zhang. Domain Adaptive Person Re-Identification via Coupling Optimization. ACM MM, 2020, **Oral**. (CCF A)
   提出数据域无关映射算法，将有监督与无监督图像映射到共享特征空间中，提升知识迁移效率。
   提出全局-局部距离优化算法，在模型优化过程中引入更多正负样本，增强模型对无监督数据标注预测中噪声的鲁棒性，提升优化效率。

3. Xiaobin Liu, Shiliang Zhang, Xiaoyu Wang, Richang Hong, Qi Tian. Group-Group Loss Based Global-Regional Feature Learning for Vehicle Re-Identification. IEEE Transactions on Image Processing, vol. 29, pp. 2638-2652, 2020. (SCI, CCF A, IF: 9.34)
   提出集合距离度量学习算法，同时优化类内和类间距离，提升度量学习效率。
   提出全局-局部特征提取算法和动态局部权重预测算法，提升细节分辨能力。

4. **Xiaobin Liu**, Shiliang Zhang, Tiejun Huang, Qi Tian. E2BoWs: An End-to-End Bag-of-Words Model via Deep Convolutional Neural Network for Image Retrieval. Neurocomputing, vol. 395, pp. 188-198, 2020. (SCI, IF: 4.438)
   提出词袋学习层，利用卷积神经网络提取包含语义信息的视觉词汇。
   提出阈值学习层，自适应地学习阈值过滤视觉词汇，提升时间与内存的效率。

5. **Xiaobin Liu**, Shiliang Zhang, Ming Yang. Self-Guided Hash Coding for Large-Scale Person Re-Identification. IEEE MIP, 2019, **Oral**. (Acceptance rate: **19.3%**)
   提出自监督算法生成伪图像作为训练中难样本，缓解标注数据不足的问题。
   提出新的训练算法，学习紧凑二值特征，实现高效的再识别应用。

6. **Xiaobin Liu**, Shiliang Zhang, Qingming Huang, Wen Gao. RAM: A Region-Aware Deep Model for Vehicle Re-Identification. IEEE ICME, 2018.
   提出局部感知模型，提取局部特征，增强模型对细节感知能力。
   提出属性特征提取分支，提取属性特征，提升特征鲁棒性。
7. **Xiaobin Liu**, Shiliang Zhang, Tiejun Huang, Qi Tian. E2BoWs: An End-to-End Bag-of-Words Model via Deep Convolutional Neural Network. China MM, 2017.
8. Jianzhong He, **Xiaobin Liu**, Shiliang Zhang. EAGER: Edge-Aided imaGe understanding System. ACM ICMR, 2019.
9. Shangzhi Teng, **Xiaobin Liu**, Shiliang Zhang, Qingming Huang. SCAN: Spatial and Channel Attention Network for Vehicle Re-Identification, PCM, 2018.
10. Longhui Wei，**Xiaobin Liu**, Jianing Li, Shiliang Zhang. VP-ReID: Vehicle and Person Re-Identification System, ICMR, 2018.

发明专利

1. 张史梁，田奇，高文，**刘晓滨**. 一种车辆再识别方法及系统. 201711395760.7
2. 张史梁，**刘晓滨**. 一种基于耦合优化的无监督行人再识别技术. 申请中.

应用系统

1. 基于边缘辅助的图像内容理解系统. ACM ICMR 2019
2. 车辆行人重识别系统. ACM ICMR 2018
3. 大规模人车图像精准检索系统. ChinaMM 2017

奖励荣誉

1. 2020 北京大学博士研究生专项奖学金
2. 2020 北京大学优秀团员
3. 2019 北京大学博士研究生专项奖学金
4. 2018 北京大学博士研究生专项奖学金
5. 2018 未来媒体网络协同创新中心“卓越人才”奖学金 (数字视频编解码国家工程实验室二年级博士中只有 5 名)

学术服务

我是以下期刊或会议的审稿人：IEEE T-IP, IEEE T-VT, IEEE T-CSVT, IEEE T-ITS, IEEE JBHI, IET-CVI, Neurocomputing, AAAI 2020, ISCAS 2020, VCIP 2020.