刘晓滨
腾讯科技（北京）有限公司 研究员
研究方向：多模态数据理解
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教育背景

北京大学 计算机应用技术 2016.09-2022.01
理学博士学位

南开大学 智能科学与技术 2012.09-2016.06
工学学士学位

工作经历

腾讯科技（北京）有限公司 2022.02--至今
应用技术研究员

发表论文及专利(8 篇一作，3 篇二作，2 项专利)

1. Group-Group Loss Based Global-Regional Feature Learning for Vehicle Re-Identification.
   Xiaobin Liu, Shiliang Zhang, Xiaoyu Wang, Richang Hong, Qi Tian.
   *IEEE Transactions on Image Processing (**TIP**)*, 2019. (**SCI 一区 Top, IF: 10.856, CCF A**)
   以样本集合为单位进行度量学习，解耦类内和类间距离优化，直接且高效地优化最终的距离度量学习目标。充分验证局部特征提取方法，提取局部特征并动态预测局部特征权重，提升细节分辨能力和对噪声鲁棒性。

2. Who is closer: A Computational Model for Domain Gap Evaluation.
   Xiaobin Liu, Shiliang Zhang.
   *Pattern Recognition (**PR**)*, 2021. (**SCI 一区 Top, IF: 7.74**)
   首次提出衡量数据域鸿沟大小关系任务，提出基于分类熵的可计算模型，实现数据域鸿沟大小关系预测。在多个数据集上进行充分实验，证明了所提方法的合理性，以及数据域距离度量对无监督学习的指导作用。

3. Domain Adaptive Person Re-Identification via Coupling Optimization.
   Xiaobin Liu, Shiliang Zhang.
   ACM MM, 2020, **Oral**. (**CCF A**)
   将不同数据域图像映射到同一共享特征空间，可以充分利用有标注图像优化特征空间，提升知识迁移效率。基于全局距离关系优化特征，对标签噪声更鲁棒。基于摄像头间差异加权样本，提升跨摄像头识别准确率。

4. Graph Consistency based Mean-Teaching for Unsupervised Domain Adaptive Person Re-Identification.
   Xiaobin Liu, Shiliang Zhang.
   IJCAI 2021. (**CCF A**)
   使用样本图一致性约束，监督学生模型向教师模型学习，提升了知识蒸馏效率和对伪标签中噪声的鲁棒性。基于样本图结构融合多个教师模型的知识，使用融合后的样本图结构监督学生模型，高效实现模型融合。

5. E2BoWs: An End-to-End Bag-of-Words Model via Deep Convolutional Neural Networks for Image Retrieval.
   Xiaobin Liu, Shiliang Zhang, Tiejun Huang, Qi Tian.
   Neurocomputing, 2019. (SCI 二区 **Top**, **IF: 5.719**)
   首次提出将词汇树与 CNN 结合，分别利用其快速检索的优势及高层语义特征提取的优势，实现端到端的高层语义词汇学习，从而实现快速的基于语义的图像检索。自适应地学习阈值过滤低值响应，提升效率。

6. RAM: A Region-Aware Deep Model for Vehicle Re-Identification.
   Xiaobin Liu, Shiliang Zhang, Qingming Huang, Wen Gao.
   IEEE ICME, 2018. (CCF B)
   设计提取局部特征，增强细节感知能力。设计提取属性特征，提升鲁棒性。分步训练模型参数，提升效率。

7. Self-Guided Hash Coding for Large-Scale Person Re-Identification.

Xiaobin Liu, Shiliang Zhang, Ming Yang.
IEEE MIPR, 2019, **Oral**. (Acceptance rate: **19.3%**)
将行人图片划分为人体部件，基于部件生成伪图片，缓解标注数据不足问题。学习哈希码，实现高效应用。

8. E2BoWs: An End-to-End Bag-of-Words Model via Deep Convolutional Neural Network.
Xiaobin Liu, Shiliang Zhang, Tiejun Huang, Qi Tian.
China MM, 2017.

9. EAGER: Edge-Aided imaGe understanding System. [1]
Jianzhong He, **Xiaobin Liu**, Shiliang Zhang.
ACM ICMR, 2019.

10. SCAN: Spatial and Channel Attention Network for Vehicle Re-Identification.
Shangzhi Teng, **Xiaobin Liu**, Shiliang Zhang, Qingming Huang.
PCM, 2018.

11. VP-ReID: Vehicle and Person Re-Identification System.
Longhui Wei，**Xiaobin Liu**, Jianing Li, Shiliang Zhang.
ACM ICMR, 2018.

12. 一种车辆再识别方法及系统. 张史梁，田奇，高文，**刘晓滨**. 专利号：201711395760.7

13. 一种目标行人的重识别方法. 张史梁，**刘晓滨**. 公开号：202011126529.X

参与项目

深圳鹏城实验室数字视网膜项目	2019-2021
公交车场景下行人重识别项目	2019
基于边缘辅助的图像内容理解系统 在 **ACM ICMR 2019** 上展示	2019
车辆行人重识别系统 在 **ACM ICMR 2018** 上展示	2018
大规模人车图像精准检索系统 在**首届中国多媒体大会**（ChinaMM 2017）上展示	2017
基于单目视觉的运载机器人目标识别与随动跟踪 国家大学生创新训练计划 **负责人**	2014-2016
基于单目视觉的随动运载机器人 天津市“挑战杯”参赛项目 **负责人**	2015
基于感知机的字母识别与机械臂控制 **独立完成**	2015
基于 Hough 算法的车道线检测及路标检测系统 **独立完成**	2014
基于 MFC 与 A*算法的可视化智能交通系统 **独立完成**	2014
基于 MFC 与 PID 控制的可视化液位控制系统 **独立完成**	2013

获奖荣誉

北京大学 博士研究生专项奖学金 (1 万元, 为本年度实验室**唯一获得者**)	2020
北京大学 优秀团员	2020
北京大学 博士研究生专项奖学金 (1 万元)	2019
未来媒体网络协同创新中心 “卓越人才”奖学金 (2 万元)	2018
北京大学 博士研究生专项奖学金 (1 万元)	2018
第四届中国研究生智慧城市技术与创意设计大赛 车辆精准检索 技术擂台赛**第四名**	2017
南开大学 创新科研奖励三等奖 (**负责人**)	2016
南开大学 优秀军训政工管理干部	2016
天津市人民政府奖学金 (8 千元，**专业唯一**)	2015
天津市“挑战杯”**二等奖** (**负责人**)	2015
美国大学生数学建模竞赛**一等奖** (M 奖)	2015
南开大学“公能”奖学金	2014
南开大学 计算机与控制工程学院 十佳学生骨干	2014
南开大学 **综合一等**奖学金 (5 千元)	2013

南开大学 信息技术科学学院 优秀学生干事 2013

服务工作

担任审稿人：IJCV, IEEE T-IP, IEEE T-MM, IEEE T-VT, IEEE T-CSVT, IEEE T-ITS, IEEE JBHI, IET-CVI, Neurocomputing, JVCIR, CVPR 2021, AAAI 2020, ISCAS 2020, VCIP 2020.

曾担任：北京大学数字媒体研究所班委、毕业班班长，北京大学信息学院研究生会干事，南开大学软件学院军训副指导员，南开大学计算机与控制工程学院学生会副主席兼任学术部部长。

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, Xiaoyu Wang, Richang Hong, Qi Tian. Group-Group Loss Based Global-Regional Feature Learning for Vehicle Re-Identification. *IEEE Transactions on Image Processing (**TIP**)*, 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.

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. Graph Consistency based Mean-Teaching for Unsupervised Domain Adaptive Person Re-Identification. ***IJCAI** 2021*. (**CCF A**)
   Propose to optimize unsupervised model with graph consistence constraint.
   Propose to ensemble multiple pre-trained models by graph merge.

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 for image retrieval.
   Propose a thresholding layer to adaptively filter visual words to ensure the efficiency.

5. **Xiaobin Liu**, Shiliang Zhang. Who is closer: A Computational Model for Domain Gap Evaluation. *Pattern Recognition*. Under reviewing after major revision.
   Propose a computational model for domain gap evaluation.
   Show the guidance on unsupervised learning of our model.

6. **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.

7. **Xiaobin Liu**, Shiliang Zhang, Qingming Huang, Wen Gao. RAM: A Region-Aware Deep Model for Vehicle Re-

Identification. *IEEE ICME*, 2018. (CCF B)
Propose a region-aware model to extract detailed information from local regions.
Propose an attribute branch to extract attribute features to enhance the robustness.

8. **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.
9. Jianzhong He, **Xiaobin Liu**, Shiliang Zhang. EAGER: Edge-Aided imaGe understanding System. *ACM ICMR*, 2019.
10. Shangzhi Teng, **Xiaobin Liu**, Shiliang Zhang, Qingming Huang. SCAN: Spatial and Channel Attention Network for Vehicle Re-Identification. *PCM*, 2018.
11. 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 and Device for Person Re-Identification. CN Patent Number: 202011126529.X.

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. (RMB 10K, only one in my Lab.)
2. Outstanding member of the Communist Youth League of Peking University, 2020.
3. Special Academic Scholarship, Peking University, 2019. (RMB 10K)
4. Special Academic Scholarship, Peking University, 2018. (RMB 10K)
5. Excellence Talents Scholarship, Cooperative Medianet Innovation Center, 2018. (RMB 20K, only 5 in 1st&2nd-year Ph.D. student in our Lab.)
6. Tianjin Government Scholarship, Nankai University, 2015. (RMB 8K, only one among students majoring in Artificial Science and Technology)

ACADEMIC SERVICES

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