Zhun Zhong

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Homepage: `http://zhunzhong.site`
Google Scholar Citation: **8000+**

Education

Xiamen University, China *September 2015 - December 2019*
PhD in Engineering, Computer Science
Advisor: Prof. Shaozi Li

University of Technology Sydney, Australia *September 2017 - September 2019*
Joint PhD Student
Advisor: Prof. Yi Yang, Dr. Liang Zheng

China University of Petroleum, China *September 2012 - June 2015*
Master in Engineering, Computer Science
Advisor: Prof. Zongmin Li

East China University of Technology, China *September 2008 - June 2012*
Bachelor in Engineering, Computer Science

Research Experience

University of Nottingham, UK *July 2023 - Present*
Assistant Professor

University of Trento, Italy *December 2022 - July 2023*
Assistant Professor

University of Trento, Italy *February 2019 - December 2022*
Post-doctoral
Advisor: Prof. Nicu Sebe

Research Interests

I commit to designing robust and scalable visual recognition systems for real-world applications. To achieve this goal, I mainly focus on the areas of data augmentation, unsupervised/semi- supervised learning, domain generalization, domain adaptation and novel class discovery, and investigate their advantages in visual tasks, such as object retrieval, image classification, semantic segmentation, etc.

Selected Publications

1. Random Erasing Data Augmentation
   Zhun Zhong, Liang Zheng, Guoliang Kang, Shaozi Li, Yi Yang
   AAAI Conference on Artificial Intelligence (AAAI), Oral, 2020 (**2700+ citations**)
   PaperDigest Most Influential AAAI Papers (1st-Place in 2020)
   Contribution: This paper proposed one widely used data augmentation method in the computer vision community. Its effectiveness has been demonstrated in many fields. It is also included in many deep learning libraries as common augmentation function.

2. Re-ranking Person Re-identification with k-reciprocal Encoding
   Zhun Zhong, Liang Zheng, Donglin Cao, Shaozi Li
   IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2017 (**1500+ citations**)

Contribution: This paper proposed one widely used re-ranking method in person re-identification. It is now the most popular reranking approach in re-ID and is widely utilized in both academia and industry. It is also included in many re-ID libraries as an effective method to further boost the re-ID accuracy of different approaches.

3. Camera Style Adaptation for Person Re-identification
Zhun Zhong, Liang Zheng, Zhedong Zheng, Shaozi Li, Yi Yang
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2018 (**540+ citations**)
Contribution: This work highlights the importance of camera style variations in re-ID and inspired other researchers to solve the problem of re-ID from the perspective of camera style. Many works have demonstrated the significance of reducing the camera style variations, especially in unsupervised reID and domain adaptive re-ID.

4. Invariance Matters: Exemplar Memory for Domain Adaptive Person Re-identification
Zhun Zhong, Liang Zheng, Zhiming Luo, Shaozi Li, Yi Yang
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2019 (**440+ citations**)
Contribution: This paper first proposed the memory-based framework for open set domain adaptation, which enables the network to dynamically discover reliable positive pairs during training. Now, many papers have built their baselines based on my proposed memory-based framework to solve the problems of unsupervised re-ID and domain adaptive re-ID.

Full Publications

Peer-Reviewed Conference Papers

2023

1. Discover and Align Taxonomic Context Priors for Open-world Semi-Supervised Learning
Yu Wang, **Zhun Zhong**, Pengchong Qiao, Xuxin Cheng, Xiawu Zheng, Chang Liu, Nicu Sebe
Conference on Neural Information Processing Systems (NeurIPS), 2023

2. Sparsely Annotated Semantic Segmentation with Adaptive Gaussian Mixtures
Linshan Wu, **Zhun Zhong**, Leyuan Fang, Xingxin He, Qiang Liu, Jiayi Ma, Hao Chen
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2023

3. Dynamically Instance-Guided Adaptation: A Backward-free Approach for Test-Time Domain Adaptive Semantic Segmentation
Wei Wang, **Zhun Zhong**, Weijie Wang, Xi Chen, Charles Ling, Boyu Wang, Nicu Sebe
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2023

4. Dynamic Conceptional Contrastive Learning for Generalized Category Discovery
Nan Pu, **Zhun Zhong***, Nicu Sebe
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2023
(* corresponding author)

5. Cross-Modality Earth Mover's Distance for Visible Thermal Person Re-Identification
Yongguo Ling, **Zhun Zhong**, Zhiming Luo, Fengxiang Yang, Donglin Cao, Shaozi Li, Nicu Sebe
AAAI Conference on Artificial Intelligence (AAAI), 2023

6. Exploring Non-Target Knowledge for Improving Ensemble Universal Adversarial Attacks
Juanjuan Weng, Zhiming Luo, **Zhun Zhong**, Dazhen Lin, Shaozi Li
AAAI Conference on Artificial Intelligence (AAAI), 2023

7. Multi-View Domain Adaptive Object Detection on Camera Networks
Yan Lu, **Zhun Zhong**, Yuanchao Shu
AAAI Conference on Artificial Intelligence (AAAI), 2023

2022

8. Adversarial Style Augmentation for Domain Generalized Urban-Scene Segmentation
Zhun Zhong*+, Yuyang Zhao*, Gim Hee Lee, Nicu Sebe
The Conference on Neural Information Processing Systems (NeurIPS), 2022
(* equal contribution, + corresponding author)

9. Class-incremental Novel Class Discovery
   Subhankar Roy, Mingxuan Liu, **Zhun Zhong***, Nicu Sebe, Elisa Ricci
   (* corresponding author)
   European Conference on Computer Vision (ECCV), 2022

10. Style-Hallucinated Dual Consistency Learning for Domain Generalized Semantic Segmentation
    Yuyang Zhao, **Zhun Zhong**, Na Zhao, Nicu Sebe, Gim Hee Lee
    European Conference on Computer Vision (ECCV), 2022

11. 3D-Aware Semantic-Guided Generative Model for Human Synthesis
    Subhankar Roy, Mingxuan Liu, Jichao Zhang, Enver Sangineto, Hao Tang, Aliaksandr Siarohin, **Zhun Zhong**, Nicu Sebe, Wei Wang
    European Conference on Computer Vision (ECCV), 2022

12. Novel Class Discovery in Semantic Segmentation
    Yuyang Zhao, **Zhun Zhong**, Nicu Sebe, Gim Hee Lee
    IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2022

2021

13. A Unified Objective for Novel Class Discovery
    Enrico Fini, Enver Sangineto, Stephane Lathuiliere, **Zhun Zhong***, Moin Nabi , Elisa Ricci
    IEEE Conference on International Conference on Computer Vision (ICCV), Oral, 2021
    (* corresponding author)

14. Neighborhood Contrastive Learning for Novel Class Discovery
    Zhun Zhong, Enrico Fini, Subhankar Roy, Zhiming Luo, Elisa Ricci, Nicu Sebe
    IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2021

15. OpenMix: Reviving Known Knowledge for Discovering Novel Visual Categories in An Open World
    Zhun Zhong, Linchao Zhu, Zhiming Luo, Shaozi Li, Yi Yang, Nicu Sebe
    IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2021

16. Joint Noise-Tolerant Learning and Meta Camera Shift Adaptation for Unsupervised Person Re-Identification
    Fengxiang Yang*, **Zhun Zhong***, Zhiming Luo, Yuanzheng Cai, Shaozi Li, Nicu Sebe
    IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2021
    (* equal contribution)

17. Learning to Generalize Unseen Domains via Memory-based Multi-Source Meta-Learning for Person Re-Identification
    Yuyang Zhao*, **Zhun Zhong***, Fengxiang Yang, Zhiming Luo, Shaozi Li, Nicu Sebe
    IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2021
    (* equal contribution)

18. Curriculum Graph Co-Teaching for Multi-Target Domain Adaptation
    Subhankar Roy, Evgeny Krivosheev, **Zhun Zhong***, Elisa Ricci, Nicu Sebe
    IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2021
    (* corresponding author)

19. Learning to Attack Real-World Models for Person Re-identification via Virtual-Guided Meta-Learning
    Fengxiang Yang, **Zhun Zhong**, Hong Liu, Zheng Wang, Zhiming Luo, Shaozi Li, Nicu Sebe, Shin'ichi Satoh.
    AAAI Conference on Artificial Intelligence (AAAI), 2021

2020

20. Random Erasing Data Augmentation
    Zhun Zhong, Liang Zheng, Guoliang Kang, Shaozi Li, Yi Yang
    AAAI Conference on Artificial Intelligence (AAAI), Oral, 2020 (**2000+ citations**)
    PaperDigest Most Influential AAAI Papers (1st-Place in 2020)

21. Class-Aware Modality Mix and Center-guided Metric Learning for Visible-Thermal Person Re-Identification
    Yongguo Lin, **Zhun Zhong**, Zhiming Luo, Palo Rota, Shaozi Li, Nicu Sebe
    ACM International Conference on Multimedia (MM), Oral, 2020

22. Asymmetric Co-Teaching for Unsupervised Cross Domain Person Re-Identification
Fengxiang Yang, Ke Li, **Zhun Zhong**, Zhiming Luo, Shaozi Li, et al.
AAAI Conference on Artificial Intelligence (AAAI), 2020 (100+ citations)

Before 2019

23. Invariance Matters: Exemplar Memory for Domain Adaptive Person Re-identification
Zhun Zhong, Liang Zheng, Zhiming Luo, Shaozi Li, Yi Yang
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2019 (**440+ citations**)

24. Camera Style Adaptation for Person Re-identification
Zhun Zhong, Liang Zheng, Zhedong Zheng, Shaozi Li, Yi Yang
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2018 (**540+ citations**)

25. Generalizing A Person Retrieval Model Hetero- and Homogeneously
Zhun Zhong, Liang Zheng, Shaozi Li, Yi Yang
European Conference on Computer Vision (ECCV), 2018 (**390+ citations**)

26. Re-ranking Person Re-identification with k-reciprocal Encoding
Zhun Zhong, Liang Zheng, Donglin Cao, Shaozi Li
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2017 (**1200+ citations**)

Peer-Reviewed Journal Papers

2023

1. Style-Hallucinated Dual Consistency Learning: A Unified Framework for Visual Domain Generalization
Yuyang Zhao, **Zhun Zhong**, Na Zhao, Nicu Sebe, and Gim Hee Lee
International Journal of Computer Vision (IJCV), 2023

2. Mitigating Robust Overfitting via Self-Residual-Calibration Regularization
Hong Liu, **Zhun Zhong***, Nicu Sebe, Shin'ichi Satoh
Artificial Intelligence (AI), 2023
(* corresponding author)

3. Querying Labeled for Unlabeled: Cross-Image Semantic Consistency Guided Semi-Supervised Semantic Segmentation
Linshan Wu, Leyuan Fang, Xingxin He, Min He, Jiayi Ma, **Zhun Zhong**
IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), 2023.

4. 100-Driver: A Large-Scale, Diverse Dataset for Distracted Driver Classification
Jing Wang, Wenjing Li, Fang Li, Jun Zhang, Zhongcheng Wu, **Zhun Zhong**, Nicu Sebe
IEEE Transactions on Intelligent Transportation Systems (TITS), 2023

5. Logit Margin Matters: Improving Transferable Targeted Adversarial Attack by Logit Calibration
Juanjuan Weng, Zhiming Luo, Shaozi Li, Nicu Sebe, **Zhun Zhong**
IEEE Transactions on Information Forensics and Security (TIFS), 2023.

6. Win-win by competition: Auxiliary-free cloth-changing person re-identification
Zhengwei Yang, Xian Zhong, **Zhun Zhong**, Hong Liu, Zheng Wang, Shin'ichi Satoh
IEEE Transactions on Image Processing (TIP), 2023.

2022

7. Towards Robust Person Re-Identification by Defending Against Universal Attackers
Fengxiang Yang, Juanjuan Weng, **Zhun Zhong**, Hong Liu, Zheng Wang, Zhiming Luo, Donglin Cao, Shaozi Li, Shin'ichi Satoh, Nicu Sebe
IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), 2022.

8. Structure-Guided Cross-Attention Network for Cross-Domain OCT Fluid Segmentation
Xingxin He, **Zhun Zhong**, Leyuan Fang, Min He, and Nicu Sebe
IEEE Transactions on Image Processing (TIP), 2022

9. Joint Representation Learning and Keypoint Detection for Cross-view Geo-localization
Jinliang Lin, Zhedong Zheng, **Zhun Zhong**, Zhiming Luo, Shaozi Li, Yi Yang, Nicu Sebe
IEEE Transactions on Image Processing (TIP), 2022

10. Source-Free Open Compound Domain Adaptation in Semantic Segmentation
Yuyang Zhao*, **Zhun Zhong***+, Zhiming Luo, Gim Hee Lee, Nicu Sebe
IEEE Transactions on Circuits and Systems for Video Technology (TCSVT), 2022
(* equal contribution, + corresponding author)

2020

11. Leveraging Virtual and Real Person for Unsupervised Person Re-identification
Fengxiang Yang, **Zhun Zhong**, Zhiming Luo, Sheng Lian, Shaozi Li
IEEE Transactions on Multimedia (TMM), 2020

12. Learning to Adapt Invariance in Memory for Person Re-identification
Zhun Zhong, Liang Zheng, Zhiming Luo, Shaozi Li, Yi Yang
IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), 2020.

Before 2019

13. CamStyle: A Novel Data Augmentation Method for Person Re-identification
Zhun Zhong, Liang Zheng, Zhedong Zheng, Shaozi Li, Yi Yang
IEEE Transactions on Image Processing (TIP), 2019 (**200+ citations**)

14. Class-Specific Object Proposals Re-ranking for Object Detection in Automatic Driving
Zhun Zhong, Mingyi Lei, Donglin Cao, Jianping Fan, Shaozi Li
Neurocomputing, 2017

15. Detecting Ground Control Points via Convolutional Neural Network for Stereo Matching
Zhun Zhong, Songzhi Su, Donglin Cao, Shaozi Li, Zhihan Lv
Multimedia Tools and Applications (MTA), 2016

Professional Services

Area Chair / Senior Program Committee

- IEEE International Conference on Learning and Representation (ICLR): 2024 (Area Chair)
- IEEE International Conference on Computer Vision and Pattern Recognition (CVPR): 2024 (Area Chair)
- ACM Multimedia (MM): 2022 (Open Source Competition Chair)
- ACM Multimedia (MM): 2022 (Area Chair)
- ACM Multimedia (MM): 2022 (Open Source Competition Chair)
- AAAI Conference on Artificial Intelligence (AAAI): 2022 (Senior PC)
- International Joint Conferences on Artificial Intelligence (IJCAI): 2021 (Senior PC)

Journal Editor

- Guest Editor: International Journal of Computer Vision (IJCV)
- Associate Editor: Image and Visual Computing (IVC)

Conference Paper Reviewer

- IEEE International Conference on Computer Vision and Pattern Recognition (CVPR): 2019-2023
- IEEE International Conference on Computer Vision (ICCV): 2019-2023
- European Conference on Computer Vision (ECCV): 2020-2022
- International Conference on Learning and Representation (ICLR): 2021-2023
- International Conference on Machine Learning (ICML): 2022-2023
- Conference on Neural Information Processing Systems (NeurIPS): 2020-2022

- ACM Multimedia (MM): 2020-2023
- AAAI Conference on Artificial Intelligence (AAAI): 2019-2023
- International Joint Conferences on Artificial Intelligence (IJCAI): 2021-2023

Journal Paper Reviewer

- IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
- International Journal of Computer Vision (IJCV)
- IEEE Transactions on Image Processing (TIP)
- IEEE Transactions on Multimedia (TMM)
- Transactions on Machine Learning Research (TMLR)
- IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)
- Neurocomputing

Other Services

- Evaluator of ELLIS PhD Program 2022-2023

Teaching Experience

- **Lecturer.** Trends and Applications of Computer Vision, Master Course, University of Trento, 2022/2023.
- **Teaching Assistant.** Introduction to Computer Vision, Master Course, Xiamen University, 2016/2017.
- **Teaching Assistant.** Introduction to Computer Vision, Master Course, Xiamen University, 2015/2016.

Invited Talks

- **Style Matters in Domain Generalized Semantic Segmentation**. I gave a talk at Hefei University of Technology in May 2023.
- **Techniques in Novel Class Discovery**. I gave a talk at NAVER LABS Europe in June 2022.
- **Research Experience and Tips**. I gave a talk at China University of Petroleum in Apr 2022.
- **Random Erasing Data Augmentation**. I gave a talk on the seminar of the 'Excellent Papers in Computer Vision' at China Society of Image and Graphics, in Jan 2022.
- **A Life of One Paper**. I gave a talk at Xiamen University in Nov 2021.
- **Novel Class Discovery**. I gave a talk at University of Trento in May 2021.
- **Research Experience and Tips**. I gave a talk at Xiamen University in Dec 2019.
- **Textures, Objects, and Scenes**. I presented a tutorial in CVPR 2019, on behalf of Dr. Liang Zheng.
- **Target Re-Identification and Multi-Target Multi-Camera Tracking**. I hosted a workshop in CVPR 2019, on behalf of Dr. Liang Zheng.
- **Representation Learning in Pedestrian Re-identification**. On behalf of Dr. Liang Zheng, I gave a talk at European Conference on Computer Vision (ECCV) Tutorial, 2018

Awards

- **World's Top 2% Scientists 2023 by Stanford University**.
- **World's Top 2% Scientists 2022 by Stanford University**.
- **AI 2000 Most Influential Scholar Honorable Mention in AAAI/IJCAI:** AMiner, 2022.
- **AI 2000 Most Influential Scholar Honorable Mention in AAAI/IJCAI:** AMiner, 2021.
- **Outstanding Reviewer:** NeurIPS 2021.
- **Outstanding Reviewer:** CVPR 2020.
- **Outstanding Graduate Student**, Xiamen University, 2020.
- **National Scholarships**, China, 2019.
- **CSC Joint PhD Scholarship**, China Scholarship Council, 2017-2019.
- **China Aerospace Science and Technology Corporation Scholarship**, Xiamen University, 2017.
- **Postgraduate Scholarship**, China University of Petroleum, 2015.
- **Undergraduate Scholarship**, East China University of Technology, 2010.

Grants

- Federated Learning for Domain Generalized Person Re-identification, **Principal Investigator**, 30,000 USD (8,000 V100 GPU Hours), ISCRA, No. HP10CHYQMV, Italy, 2022.
- **Student Travel Grant**. USD1800, Xiamen University, China, 2017.