Zhizhong Li
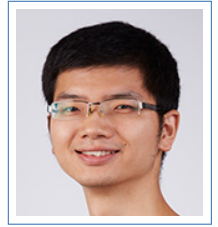# 李治中

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Research Interests

Graph Convolution | Reinforcement Learning | Generative Models | Deep Learning | Ensemble Learning | Geometric Optimization

Education

2015–Now **The Chinese University of Hong Kong**, *Hong Kong*.
Ph.D. Candidate, Information Engineering. Advisor: Prof. Dahua Lin

2011–2015 **Peking University**, *Beijing, China*.
M.S. School of Mathematical Sciences. Symplectic Geometry. Advisor: Prof. Xiaobo Liu

2006–2010 **Zhengzhou University**, *Zhengzhou, China*.
B.S. Mathematics and Applied Mathematics
B.A. Double Major in English

Publication

– Cong Ma*, **Zhizhong Li***, Dahua Lin, Jiangshe Zhang. Paralleled Training of Multi-Environments for Adaptive Shaping: A Study on StarCraft II. *Under Review*, 2019.

– Lanxin Lei*, **Zhizhong Li***, Dahua Lin. Biased Estimates of Advantages over Path Ensembles. *Under Review*, 2019.

– Xingxing Zou*, **Zhizhong Li***, Ke Bai, Dahua Lin, Waikeung Wong. Explainable Clothing Aesthetic Evaluation with Gradient Penalty. *Manuscript*, 2019.

[1] Sijie Yan*, **Zhizhong Li***, Yuanjun Xiong, Huahan Yan, Dahua Lin. Convolutional Sequence Generation for Skeleton-Based Action Synthesis. ICCV 2019.

[2] **Zhizhong Li**. A Stroke of Genius: Generating Images. In Xiao'ou Tang and Yukun Chen, editors, *Fundamentals of Artificial Intelligence (Senior High School Edition)*, chapter 8, pages 135–152. East China Normal University Press and The Commercial Press, 2018. [link]

[3] **Zhizhong Li** and Dahua Lin. Integrating Specialized Classifiers Based on Continuous Time Markov Chain. In *Proceedings of the Twenty-Sixth International Joint Conference on Artificial Intelligence (IJCAI)*, pages 2244–2251, 2017. [paper] [code]

[4] Xingcheng Zhang*, **Zhizhong Li***, Chen Change Loy, and Dahua Lin. PolyNet: A Pursuit of Structural Diversity in Very Deep Networks. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, pages 718–726, 2017. [paper] [repo]

[5] **Zhizhong Li**, Deli Zhao, Zhouchen Lin, and Edward Y Chang. Determining Step Sizes in Geometric Optimization Algorithms. In *2015 IEEE International Symposium on Information Theory (ISIT)*, pages 1217–1221. IEEE, 2015. [paper] [code]

[6] **Zhizhong Li**, Deli Zhao, Zhouchen Lin, and Edward Y Chang. A New Retraction for Accelerating the Riemannian Three-Factor Low-Rank Matrix Completion Algorithm. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, pages 4530–4538, 2015. [paper] [code]

Internship

May–Aug 2018   **SenseTime**, *Shenzhen, China.*
Intern at Training & Supercomputing Platform   Supervisor: Shengen Yan
Develop the back-end of the SenseStudy AI package. It is an interactive system that helps beginners to learn concepts and techniques in machine learning.

Aug 2014– Jul 2015   **HTC**, *Beijing, China.*
Intern at Advanced Algorithm Research   Supervisor: Deli Zhao
Research on geometric optimization algorithms. Applying Riemannian geometry in solving the low-rank matrix decomposition problem for recommendation systems.

Teaching Assistant

TA at CUHK
- Linear Algebra and Vector Calculus for Engineers (ESTR), *Spring 2019 and 2018*
- Introduction to Engineering Design, *Fall 2018, 2017 and 2016*
- Microcontrollers and Embedded Systems, *Spring 2017*
- Engineering Physics: Electromagnetics, Optics and Modern Physics, *Spring 2016*
- Simulation and Statistical Analysis, *Fall 2015*

TA at PKU
- Geometry, School of Mathematics, *Fall 2013*
- Linear Algebra, Guanghua School of Management, *Spring 2013*
- Calculus, School of Economics, *Fall 2012*

Projects

Jul–Aug 2018   **DeeCamp 2018**.
Leader of the Killers Team
We use reinforcement learning to play StarCraft II. Our group proposed a novel paralleled multi-environment shaping method, which successfully solved the *Building Marines* minigame. [demo video]

Feb–May 2018   **Clean Chinese Rare Book Images with GAN**.
Work with Yu'an Liu
The digitalized Chinese rare books often has bad visual quality due to yellowish, translucent pages. We use CycleGAN with a novel edge-keeping loss term to remove artifacts and improve the image quality. [demo]

Nov 2017– Apr 2018   **AI Textbook**.
Leader of the Writting Group
We wrote the first AI textbook in the world for high school students, which has been widely acclaimed. Except for the organizing and proofreading work, I am also the author of Chapter 8. [Douban] [Amazon]

Jul–Sep 2016   **ImageNet 2016 Competition**.
Co-leader of the CU-DeepLink Team
We won the third place in the classification+localization track of ILSVRC 2016. The proposed Very Deep PolyNet model achieves the highest single-model accuracy in the world at the time. [project] [results]

Contribution

Reviewer   IJCV, NIPS, PRCV, Journal of Harbin Institute of Technology (New Series)

Contributor   LIBLINEAR.jl | ganbase | LaTeX-Workshop | julia | vscode

Skills

- Python (PyTorch, TensorFlow), Julia, Matlab
- C#, ASP.NET

Interests

- Classical Guitar
- Squash