

# Gao Huang

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CONTACT INFORMATION	617A Center Main Building, Tsinghua University Beijing 100084, China	<i>Email:</i> gaohuang@tsinghua.edu.cn <i>Web:</i> www.gaohuang.net
RESEARCH INTERESTS	My research interests lie in machine learning and computer vision, in particular efficient deep learning, dynamic neural networks, weakly-supervised/self-supervised learning and reinforcement learning.	
APPOINTMENT	<b>Associate Professor, Tsinghua University</b> Department of Automation	<b>12/2021 - Present</b>
	<b>Assistant Professor, Tsinghua University</b> Department of Automation	<b>12/2018 - 12/2021</b>
EDUCATION	<b>PhD, Tsinghua University</b>	<b>09/2009 - 07/2015</b>
	<b>BE, Beihang University</b>	<b>09/2005 - 07/2009</b>
RESEARCH EXPERIENCE	<b>Postdoctoral Fellow, Cornell University, Ithaca</b>	<b>10/2015 - 08/2018</b>
	<b>Intern, Microsoft Research Asia, Beijing</b>	<b>04/2014 - 10/2014</b>
	<b>Visiting Scholar, Nanyang Technological University, Singapore</b>	<b>02/2014 - 03/2014</b>
	<b>Visiting Scholar, Washington University in St. Louis</b>	<b>01/2013 - 07/2013</b>
REVIEWING & SERVICES	<b>Associate Editor</b> for IEEE Transactions on Pattern Analysis and Machine Intelligence <b>Associate Editor</b> for IEEE Transactions on Big Data <b>Associate Editor</b> for Pattern Recognition <b>Area Chair (AC)</b> for NeurIPS (2022, 2023) <b>Area Chair (AC)</b> for ICCV (2023) <b>Area Chair (AC)</b> for ICML (2022) <b>Area Chair (AC)</b> for UAI (2022) <b>Area Chair (AC)</b> for CVPR (2021) <b>Senior Program Committee (SPC)</b> for IJCAI (2021, 2022) <b>Senior Program Committee (SPC)</b> for AAAI (2018, 2020) <b>Reviewer</b> for - International Journal of Computer Vision (IJCV) - IEEE Transactions on Pattern Recognition and Machine Intelligence (TPAMI) - IEEE Transactions on Image Processing (TIP) - IEEE Transactions on Neural Networks and Learning Systems (TNNLS) - IEEE Transactions on Cybernetics - ACM Transactions on Intelligent Systems and Technology (TIST) - Pattern Recognition (PR) - Journal of Machine Learning Research (JMLR) - Machine Learning (ML) - International Conference on Machine Learning (ICML) - Neural Information Processing Systems (NeurIPS) - International Conference on Artificial Intelligence and Statistics (AISTATS) - International Conference on Learning Representations (ICLR) - IEEE Conference on Computer Vision and Pattern Recognition (CVPR) - European Conference on Computer Vision (ECCV) - International Conference on Computer Vision (ICCV) - AAAI Conference on Artificial Intelligence (AAAI)	

AWARDS &  
HONORS

- CVPR Best Paper Finalists, 2022
- AI 2000 Most Influential Scholar in Computer Vision, AMiner, 2022
- MIT TR 35 Asia-Pacific, MIT Technology Review, 2021
- Research Fund for Outstanding Young Scholars, Nature Science Foundation of China, 2020
- DAMO Qingcheng Award, Alibaba, 2020
- Outstanding Young Researcher Award, Chinese Association for Artificial Intelligence, 2019
- Zhiyuan Young Scholar, Beijing Academy of Artificial Intelligence (BAAI), 2019
- First Prize of Nature Science Award, Chinese Association for Artificial Intelligence, 2018
- Super AI Leader - Pioneer Award, World AI Conference (WAIC), 2018
- NeurIPS Workshop Best Paper Award, 2018
- CVPR Best Paper Award, 2017
- Doctoral Dissertation Award, Chinese Association of Automation, 2015
- First Prize of Doctoral Dissertation Award, Tsinghua University, 2015
- Outstanding Graduate, Tsinghua University, 2015
- Top 100 Most Influential Scientific Papers from China, Ministry of Science and Technology of China, 2015
- Stars of Tomorrow Internship Program, Microsoft Research, 2014
- National Scholarship for PhD Students, Ministry of Education of China, 2012
- Outstanding Graduate of Beijing, 2009
- National Scholarship, Ministry of Education of China, 2008

INVITED TALKS  
&  
PRESENTATIONS

- ICML Workshop on Dynamic Neural Networks, Baltimore, USA, 07/2022
- CVPR Workshop on Dynamic Neural Networks Meet Computer Vision, New Orleans, USA, 06/2022
- IEEE Conference on Computer Vision and Pattern Recognition (CVPR), Virtual, 07/2021
- Rutgers Efficient AI (REFAI) Seminar, Virtual, 07/2021
- International Conference on Image Processing (ICIP), Taipei, China, 09/2019
- International Conference on Multimedia and Expo (ICME), Shanghai, China, 07/2019
- Baidu Research, Beijing, China, 06/2019
- Vision And Learning SEminar (VALSE), Hefei, China, 04/2019
- University of British Columbia, Vancouver, Canada, 05/2018
- Microsoft Research, Seattle, USA, 04/2018
- Washington University in St. Louis, USA, 04/2018
- University of Chicago, Chicago, USA, 03/2018
- Temple University, Philadelphia, USA, 02/2018
- Megvii Technology Limited, Beijing, China, 12/2017
- Shanghai Jiao Tong University, Shanghai, China, 12/2017
- AI Seminar, Cornell University, Ithaca, USA, 09/2017
- CVPR, Honolulu, USA, 07/2017
- Apple Research, Seattle, USA, 07/2017
- Microsoft Research Asia, Beijing, China, 12/2016
- Tsinghua University, Beijing, China, 12/2016
- AAAI Conference on Artificial Intelligence, Austin, USA, 01/2015
- European Conference on Machine Learning, Nancy, France, 09/2014
- Nanyang Technological University, Singapore, 02/2014

PUBLICATIONS

**Conference Publications**

1. Qisen Yang, Shenzhi Wang, Matthieu Gaetan Lin, Shiji Song, Gao Huang. Boosting Offline Reinforcement Learning with Action Preference Query. *International Conference on Machine Learning (ICML) 2023.*
2. Zhuofan Xia, Xuran Pan, Xuan Jin, Yuan He, Hui Xue, Shiji Song, Gao Huang. Budgeted Training for Vision Transformer. *International Conference on Learning Representations (ICLR) 2023.*
3. Chaofei Wang\*, Qisen Yang\*, Rui Huang, Shiji Song, Gao Huang. Efficient Knowledge

- Distillation from Model Checkpoints. *Neural Information Processing Systems* (NeurIPS Spotlight) 2022.
4. Rui Lu, Andrew Zhao, Simon Shaolei Du, Gao Huang. Provable General Function Class Representation Learning in Multitask Bandits and MDP. *Neural Information Processing Systems* (NeurIPS Spotlight) 2022.
  5. Yizeng Han\*, Zhihang Yuan\*, Yifan Pu, Chenhao Xue, Shiji Song, Guangyu Sun, Gao Huang. Latency-aware Spatial-wise Dynamic Networks. *Neural Information Processing Systems* (NeurIPS) 2022.
  6. Andrew Zhao\*, Matthieu Gaetan Lin\*, Yangguang Li, Yong-jin Liu, Gao Huang. A Mixture Of Surprises for Unsupervised Reinforcement Learning. *Neural Information Processing Systems* (NeurIPS) 2022.
  7. Xuran Pan, Tianzhu Ye, Dongchen Han, Shiji Song, Gao Huang. Contrastive Language-Image Pre-Training with Knowledge Graphs. *Neural Information Processing Systems* (NeurIPS) 2022.
  8. Yulin Wang\*, Yang Yue\*, Xinhong Xu, Ali Hassani, Victor Kulikov, Nikita Orlov, Shiji Song, Humphrey Shi, Gao Huang. AdaFocus V3: On Unified Spatial-temporal Dynamic Video Recognition. *European Conference on Computer Vision* (ECCV), 2022.
  9. Yizeng Han\*, Yifan Pu\*, Zihang Lai, Chaofei Wang, Shiji Song, Junfeng Cao, Wenhui Huang, Chao Deng, Gao Huang. Learning to Weight Samples for Dynamic Early-exiting Networks. *European Conference on Computer Vision* (ECCV), 2022.
  10. Xuran Pan, Zihang Lai, Shiji Song, Gao Huang. ActiveNeRF: Learning where to See with Uncertainty Estimation. *European Conference on Computer Vision* (ECCV), 2022.
  11. Zhuofan Xia, Xuran Pan, Shiji Song, Li Erran Li, Gao Huang. Vision Transformer with Deformable Attention. *IEEE Conference on Computer Vision and Pattern Recognition* (CVPR), 2022. **(Best Paper Finalists)**.
  12. Xuran Pan, Chunjiang Ge, Rui Lu, Shiji Song, Guanfu Chen, Zeyi Huang, Gao Huang. On the Integration of Self-Attention and Convolution. *IEEE Conference on Computer Vision and Pattern Recognition* (CVPR), 2022.
  13. Yulin Wang, Yang Yue, Yuanze Lin, Haojun Jiang, Zihang Lai, Victor Kulikov, Nikita Orlov, Humphrey Shi, Gao Huang. AdaFocus V2: End-to-End Training of Spatial Dynamic Networks for Video Recognition. *IEEE Conference on Computer Vision and Pattern Recognition* (CVPR), 2022.
  14. Haojun Jiang, Yuanze Lin, Dongchen Han, Shiji Song, Gao Huang. Pseudo-Q: Generating Pseudo Language Queries for Visual Grounding. *IEEE Conference on Computer Vision and Pattern Recognition* (CVPR), 2022.
  15. Chenxin Tao, Honghui Wang, Xizhou Zhu, Jiahua Dong, Shiji Song, Gao Huang, Jifeng Dai. Exploring the Equivalence of Siamese Self-Supervised Learning via A Unified Gradient Framework. *IEEE Conference on Computer Vision and Pattern Recognition* (CVPR), 2022.
  16. Hao Li, Tianwen Fu, Jifeng Dai, Hongsheng Li, Gao Huang, Xizhou Zhu. Autoloss-zero: Searching loss functions from scratch for generic tasks. *IEEE Conference on Computer Vision and Pattern Recognition* (CVPR), 2022.
  17. Xinglong Sun, Ali Hassani, Zhangyang Wang, Gao Huang, Humphrey Shi. DiSparse: Disentangled Sparsification for Multitask Model Compression. *IEEE Conference on Computer Vision and Pattern Recognition* (CVPR), 2022.
  18. Jiayi Guo, Chaoqun Du, Jiangshan Wang, Huijuan Huang, Pengfei Wan, Gao Huang. Assessing a Single Image in Reference-Guided Image Synthesis. *AAAI Conference on Artificial Intelligence* (AAAI), 2022

19. Yulin Wang\*, Rui Huang\*, Shiji Song, Zeyi Huang, Gao Huang. Not All Images are Worth 16x16 Words: Dynamic Vision Transformers with Adaptive Sequence Length. *Neural Information Processing Systems (NeurIPS)* 2021.
20. Chenxin Tao, Zizhang Li, Xizhou Zhu, Gao Huang, Yong Liu, Jifeng Dai. Searching Parameterized AP Loss for Object Detection. *Neural Information Processing Systems (NeurIPS)* 2021.
21. Yiqin Yang, Xiaoteng Ma, Chenghao Li, Zewu Zheng, Qiyuan Zhang, Gao Huang, Jun Yang, Qianchuan Zhao. Believe What You See: Implicit Constraint Approach for Offline Multi-Agent Reinforcement Learning. *Neural Information Processing Systems (NeurIPS)* 2021.
22. Yulin Wang\*, Zhaoxi Chen\*, Haojun Jiang, Shiji Song, Yizeng Han, Gao Huang. Adaptive Focus for Efficient Video Recognition. *International Conference on Computer Vision (ICCV Oral)* 2021.
23. Chaofei Wang, Jiayu Xiao, Yizeng Han, Qisen Yang, Shiji Song, Gao Huang. Frequency Domain Image Translation: More Photo-realistic, Better Identity-preserving. *International Conference on Computer Vision (ICCV)* 2021.
24. Mu Cai, Hong Zhang, Huijuan Huang, Qichuan Geng, Yixuan Li, Gao Huang. Frequency Domain Image Translation: More Photo-realistic, Better Identity-preserving. *International Conference on Computer Vision (ICCV)* 2021.
25. Yujing Wang\*, Yaming Yang\*, Jiangang Bai, Mingliang Zhang, Jing Bai, Jing Yu, Ce Zhang, Gao Huang, Yunhai Tong. Evolving Attention with Residual Convolutions. *International Conference on Machine Learning (ICML)* 2021.
26. Xuran Pan\*, Zhuofan Xia\*, Shiji Song, Li Erran Li, Gao Huang. 3D Object Detection with Pointformer. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2021.
27. Le Yang\*, Haojun Jiang\*, Ruojin Cai, Yulin Wang, Shiji Song, Gao Huang, Qi Tian. CondenseNet V2: Sparse Feature Reactivation for Deep Networks. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2021.
28. Zhuliang Yao, Yue Cao, Shuxin Zheng, Gao Huang, Stephen Lin. Cross-iteration Batch Normalization. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2021.
29. Yulin Wang, Zanlin Ni, Shiji Song, Le Yang, Gao Huang. Revisiting Locally Supervised Learning: an Alternative to End-to-end Training, *International Conference on Learning Representations (ICLR)* 2021, Online Virtual.
30. Hao Li\*, Chenxin Tao\*, Xizhou Zhu, Xiaogang Wang, Gao Huang, Jifeng Dai. Auto Seg-Loss: Searching Metric Surrogates for Semantic Segmentation, *International Conference on Learning Representations (ICLR)* 2021, Online Virtual.
31. Yulin Wang, Kangchen Lv, Rui Huang, Shiji Song, Le Yang, Gao Huang. Glance and Focus: a Dynamic Approach to Reducing Spatial Redundancy in Image Classification, *Neural Information Processing Systems (NeurIPS)* 2020, Vancouver, Canada.
32. Zhenda Xie, Zheng Zhang, Xizhou Zhu, Gao Huang, Stephen Lin. Spatially Adaptive Inference with Stochastic Feature Sampling and Interpolation, *European Conference on Computer Vision (ECCV Oral)*, 2020.
33. Le Yang\*, Yizeng Han\*, Xi Chen\*, Shiji Song, Jifeng Dai, Gao Huang. Resolution Adaptive Networks for Efficient Inference. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2020.

34. Haowei He, Gao Huang, Yang Yuan. Asymmetric Valleys: Beyond Sharp and Flat Local Minima, *Neural Information Processing Systems (NeurIPS Spotlight)* 2019, Vancouver, Canada.
35. Yulin Wang\*, Xuran Pan\*, Shiji Song, Hong Zhang, Cheng Wu, Gao Huang. Implicit Semantic Data Augmentation for Deep Networks, *Neural Information Processing Systems (NeurIPS)* 2019, Vancouver, Canada.
36. Wenjie Shi, Shiji Song, Hui Wu, Ya-Chu Hsu, Cheng Wu, Gao Huang. Regularized Anderson Acceleration for Off-Policy Deep Reinforcement Learning, *Neural Information Processing Systems (NeurIPS)* 2019, Vancouver, Canada.
37. Hao Li\*, Hong Zhang\*, Xiaojuan Qi, Ruigang Yang, Gao Huang. Improved Techniques for Training Adaptive Deep Networks, *International Conference on Computer Vision (ICCV)* 2019, Seoul, Korea.
38. Shuang Li, Chi Harold Liu, Binhui Xie, Limin Su, Zhengming Ding, Gao Huang. Joint Adversarial Domain Adaptation, *ACM Multimedia (ACM MM)* 2019, Nice, France.
39. Yan Wang, Zihang Lai, Gao Huang, Brian Wang, Laurens van der Maaten, Mark Campbell, Kilian Q. Weinberger. Anytime Stereo Image Depth Estimation on Mobile Devices, *International Conference on Robotics and Automation (ICRA)*, 2019, Montreal, Canada.
40. Zhuang Liu\*, Mingjie Sun\*, and Tinghui, Zhou, Gao Huang, Trevor Darrell. Rethinking the value of network pruning, *International Conference on Learning Representations (ICLR)*, 2019, New Orleans, USA.
41. Yang Fu, Yunchao Wei, Yuqian Zhou, Honghui Shi, Gao Huang, Xinchao Wang, Zhiqiang Yao, Thomas Huang, Horizontal Pyramid Matching for Person Re-identification, *AAAI Conference on Artificial Intelligence (AAAI)*, 2019, Hawaii USA.
42. Gao Huang\*, Shichen Liu\*, Laurens van der Maaten and Kilian Weinberger. CondenseNet: An Efficient DenseNet using Learned Group Convolutions. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2018, Salt Lake City, USA.
43. Yan Wang\*, Lequn Wang\*, Yurong You\*, Xu Zou, Vincent Chen, Serena Li, Gao Huang, Bharath Hariharan, Kilian Weinberger. Resource Aware Person Re-identification across Multiple Resolutions. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2018, Salt Lake City, USA.
44. Gao Huang, Danlu Chen, Tianhong Li, Felix Wu, Laurens van der Maaten and Kilian Weinberger. Multi-Scale Dense Convolutional Networks for Resource Efficient Image Classification. *International Conference on Learning Representations (ICLR Oral)*, 2018, Vancouver, Canada.
45. Zhuang Liu, Jianguo Li, Zhiqiang Shen, Gao Huang, Shoumeng Yan and Changshui Zhang. Learning Efficient ConvNets through Network Slimming. *International Conference on Computer Vision (ICCV)*, 2017, Venice, Italy.
46. Gao Huang\*, Zhuang Liu\*, Laurens van de Maaten and Kilian Weinberger. Densely Connected Convolutional Networks. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR Oral)*, 2017, Hawaii, USA. (**Best Paper Award**)
47. Gao Huang\*, Yixuan Li\*, Geoff Pleiss, Zhuang Liu, John E. Hopcroft and Kilian Weinberger. Snapshot Ensembles: Train 1, Get M for Free. *International Conference on Learning Representations (ICLR)*, 2017, Toulon, France.
48. Gao Huang\*, Chuan Guo\*, Matt Kusner, Yu Sun, Fei Sha and Kilian Weinberger. Supervised Word Mover’s Distance. *Neural Information Processing Systems (NIPS Oral)*, 2016, Barcelona, Spain.
49. Gao Huang\*, Yu Sun\*, Zhuang Liu, Daniel Sedra and Kilian Weinberger. Deep networks with stochastic depth. *European Conference on Computer Vision (ECCV Spotlight)*, 2016, Amsterdam, Netherlands. (This paper was recommended as an **Oral Presentation** at NIPS 2016 Deep Learning Symposium.)

50. Gao Huang, Jianwen Zhang, Shiji Song and Zheng Chen. Maximin separation probability clustering. *The AAAI Conference on Artificial Intelligence (AAAI)*, 2015, Austin, USA.
51. Gao Huang, Shiji Song, Zhixiang Xu, Kilian Weinberger and Cheng Wu. Transductive minimax probability machine. *European Conference on Machine Learning (ECML Oral)*, 2014, Nancy, France.
52. Zhixiang Xu, Gao Huang, Kilian Weinberger, Alice Zheng. Gradient Boosted Feature Selection. *ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD)*, 2014, New York, NY, USA.
53. Zhixiang Xu, Matt Kusner, Gao Huang and Kilian Weinberger. Anytime representation learning. *International Conference on Machine Learning (ICML)*, 2013, Atlanta GA, USA.

### Journal Publications

1. Gao Huang\*, Yulin Wang\*, Kangchen Lv, Haojun Jiang, Wenhui Huang, Pengfei Qi, Shiji Song. Glance and Focus Networks for Dynamic Visual Recognition. *IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)*, 2022.
2. Yizeng Han, Gao Huang, Shiji Song, Le Yang, Honghui Wang, Yulin Wang. Dynamic Neural Networks: A Survey. *IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)*, 2021.
3. Yizeng Han, Gao Huang, Shiji Song, Le Yang, Yitian Zhang, Haojun Jiang. Spatially adaptive feature refinement for efficient inference. *IEEE Transactions on Image Processing (TIP)*, 30, pp. 9345-9358, 2021.
4. Wenjie Shi, Gao Huang, Shiji Song, Cheng Wu. Temporal-Spatial Causal Interpretations for Vision-Based Reinforcement Learning. *IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)*, 2021.
5. Peng Jiang, Shiji Song, Gao Huang. Attention-Based Meta-Reinforcement Learning for Tracking Control of AUV With Time-Varying Dynamics, *IEEE Transactions on Neural Networks and Learning System (TNNLS)*, 2021.
6. Yulin Wang, Gao Huang, Shiji Song, Xuran Pan, Yitong Xia, Cheng Wu. Regularizing deep networks with semantic data augmentation, *IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)*, 2021.
7. Qichuan Geng, Hong Zhang, Xiaojuan Qi, Ruigang Yang, Zhong Zhou, Gao Huang. Gated Path Selection Network for Semantic Segmentation. *IEEE Transactions on Image Processing (TIP)*, 2020.
8. Wenjie Shi, Gao Huang, Shiji Song, Zhuoyuan Wang, Tingyu Lin, Cheng Wu. Self-Supervised Discovering of Interpretable Features for Reinforcement Learning, *IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)*, 2020.
9. Shuang Li, Binhui Xie, Qiuxia Lin, Chi Harold Liu, Gao Huang, Guoren Wang. Generalized Domain Conditioned Adaptation Network, *IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)*, 2020.
10. Gao Huang, Zhuang Liu, Geoff Pleiss, Laurens van der Maaten and Kilian Weinberger. Convolutional Networks with Dense Connectivity, *IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)*, 2019.
11. Shuang Li, Chi Harold Liu, Qiuxia Lin, Qi Wen, Limin Su, Gao Huang, Zhengming Ding. Deep Residual Correction Network for Partial Domain Adaptation, *IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)*, 2019.
12. Hangkai Hu, Shiji Song, Gao Huang. Self-Attention Based Temporary Curiosity in Reinforcement Learning Exploration, *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, 2019.

13. Le Yang, Shiji Song, Shuang Li, Yiming Chen, Gao Huang. Graph Embedding-Based Dimension Reduction With Extreme Learning Machine, *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, 2019.
14. Benben Jiang, Zhifeng Guo, Qunxiong Zhu and Gao Huang. Dynamic minimax probability machine-based approach for fault diagnosis using pairwise discriminate analysis, *IEEE Transactions on Control Systems Technology*, 27(2), pp. 806-813, 2019.
15. Shuang Li, Shiji Song, Gao Huang, Zhengming Ding and Cheng Wu. Domain invariant and class discriminative feature learning for visual domain adaptation. *IEEE Transactions on Image Processing*, 27(9), pp. 4260-4273, 2018.
16. Shuang Li, Shiji Song, Gao Huang, Cheng Wu, "Cross-Domain Extreme Learning Machine for Domain Adaptation", *IEEE Transactions on Systems, Man, Cybernetics : Systems*, 2018.
17. Shiji Song, Yanshang Gong, Yuli Zhang, Gao Huang and Guangbin Huang. Dimension Reduction by Minimum Error Minimax Probability Machine. *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, 47(1), pp. 58-69, 2016.
18. Shuang Li, Shiji Song and Gao Huang. Prediction reweighting for domain adaptation. *IEEE Transactions on Neural Networks and Learning Systems*, 2016.
19. Gao Huang, Shiji Song, Jatinder Gupta and Cheng Wu. Semi-supervised and unsupervised extreme learning machines. *IEEE Transactions on Cybernetics*, 44 (12), pp. 2405-2417, 2014.
20. Gao Huang, Shiji Song, Jatinder Gupta and Cheng Wu. A second order cone programming approach for semi-supervised learning. *Pattern Recognition*, 46(12), pp. 3548-3558, 2013.
21. Gao Huang, Shiji Song, Cheng Wu and Keyou You. Robust support vector regression for uncertain input and output data, *IEEE Transactions on Neural Networks and Learning System*, 23 (11), pp. 1690-1700, 2012.
22. Gao Huang, Shiji Song and Cheng Wu. Orthogonal least squares algorithm for training cascade neural networks. *IEEE Transactions on Circuits and Systems I: Regular Papers*, 59 (11), pp. 2629-2637, 2012.

### Technical Reports

1. Q Xu, G Huang, Y Yuan, C Guo, Y Sun, F Wu, K Weinberger. An empirical study on evaluation metrics of generative adversarial networks. *Technical Report*, 2018.
2. Geoff Pleiss\*, Danlu Chen\*, Gao Huang, Tongcheng Li, Laurens van der Maaten and Kilian Q. Weinberger. Memory-Efficient Implementation of DenseNets. *Technical Report*, 2017.

### \* Equal contribution

TEACHING EXPERIENCE	Lecture for <i>Pattern Recognition and Machine Learning</i>	Spring 2023
	Lecture for <i>Computer Simulation</i>	Spring 2020, 2021, 2022
	Lecture for <i>Nonlinear Programming</i>	Fall 2020, 2021
	Lecture for <i>Industrial Intelligence</i>	Fall 2020
	Department of Automation, Tsinghua University	
	Guest Lecturer for <i>Advanced Machine Learning</i>	Fall 2017
	Department of Computer Science, Cornell University	