

Haichuan Yang

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EDUCATION

University of Rochester, Rochester, NY Ph.D. Program in Computer Science	<i>Sep 2015 - present</i>
Beihang University, Beijing, China Master of Engineering (M.E.) in Computer Science and Engineering	<i>Sep 2012 - Mar 2015</i>
Sun Yat-sen University, Guanzhou, China Bachelor of Engineering (B.E.) in Software Engineering	<i>Sep 2008 - Jul 2012</i>

RESEARCH INTERESTS

Machine Learning, Sparse Optimization, Feature Selection, Model Compression in Deep Learning, Reinforcement Learning.

RESEARCH EXPERIENCE

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| University of Rochester
<i>Research Assistant</i> | <i>Sep 2015 - present</i>
<i>Rochester, NY</i> |
|-------------------------------------------------------------|---------------------------------------------------|
- **Resource-constrained Deep Neural Network (DNN) compression**
 - Addressing the problem of deploying DNNs in highly resource-constrained environments such as smart-phones and wearable devices.
 - Developing optimization-based algorithms to compress a given DNN model to meet a stringent energy budget.
 - Developing automatic framework for joint pruning and quantization without layer-wise compression ratios.
 - Published at CVPR 2019 and ICLR 2019.
 - **Theory and applications of structured sparsity induced optimizations**
 - Formulating the structured sparsity to perform feature (variable) selection with the grouped diversity preference.
 - Developing algorithms to solve the optimization problem with the structured sparsity constraint.
 - Published at CVPR 2016 and ICML 2017.
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| Tencent AI Lab
<i>Research Intern</i> | <i>Sep 2017 - Dec 2017</i>
<i>Seattle, WA</i> |
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- **Game-AI algorithm based on reinforcement learning over a parametrized action space**
 - Formulating a reinforcement learning policy composed by discrete actions that each has continuous parameters. The continuous parameters are restricted in a subspace, e.g., normalized multidimensional vector representing a direction.
 - Studying the variance of the policy gradient.
 - Published at ICLR 2019.
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| NEC Labs America
<i>Research Intern</i> | <i>May 2017 - Aug 2017, May 2016 - Aug 2016</i>
<i>Cupertino, CA</i> |
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- **Optimization-based online feature selection**
 - Considering the feature selection scenario where only a few features are accessible at any time point.
 - Developing an online feature selection algorithm which can control the memory usage and has no regularization.
 - Published at SIGKDD 2016.

SELECTED PUBLICATIONS

- 2019 **Haichuan Yang**, Shupeng Gui, Yuhao Zhu, Ji Liu. Learning Sparsity and Quantization Jointly and Automatically for Neural Network Compression via Constrained Optimization. *arXiv preprint arXiv:1910.05897*, 2019.
- 2019 **Haichuan Yang**, Yuhao Zhu, Ji Liu. ECC: Platform-Independent Energy Constrained Deep Neural Network Compression via a Bilinear Regression Model. *In IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2019.
- 2019 **Haichuan Yang**, Yuhao Zhu, Ji Liu. Energy-Constrained Compression for Deep Neural Networks via Weighted Sparse Projection and Layer Input Masking. *In International Conference on Learning Representations (ICLR)*, 2019.
- 2019 Carson Eisenach*, **Haichuan Yang***, Ji Liu, Han Liu. Marginal Policy Gradients: A Unified Family of Estimators for Bounded Action Spaces with Applications. *In International Conference on Learning Representations (ICLR)*, 2019. (* These authors contributed equally.)
- 2019 Shupeng Gui, Haotao Wang, **Haichuan Yang**, Chen Yu, Zhangyang Wang, Ji Liu. Model Compression with Adversarial Robustness: A Unified Optimization Framework. *In Conference on Neural Information Processing Systems (NeurIPS)*, 2019.
- 2019 Hongyu Xu*, Zhangyang Wang*, **Haichuan Yang**, Ding Liu, Ji Liu. Learning Simple Thresholded Features with Sparse Support Recovery. *IEEE Transactions on Circuits and Systems for Video Technology*. (* These authors contributed equally.)
- 2018 Ke Ren*, **Haichuan Yang***, Yu Zhao, Wu Chen, Mingshan Xue, Hongyu Miao, Shuai Huang, Ji Liu. Robust AUC Maximization Framework With Simultaneous Outlier Detection and Feature Selection for Positive-Unlabeled Classification. *IEEE Transactions on Neural Networks and Learning Systems*. (* These authors contributed equally.)
- 2018 Bai, Xiao, Cheng Yan, **Haichuan Yang**, Lu Bai, Jun Zhou, and Edwin Robert Hancock. Adaptive hash retrieval with kernel based similarity. *Pattern Recognition* 75 (2018): 136-148
- 2017 **Haichuan Yang**, Shupeng Gui, Chuyang Ke, Daniel Stefankovic, Ryohei Fujimaki, Ji Liu. On The Projection Operator to A Three-view Cardinality Constrained Set. *In International Conference on Machine Learning (ICML)*, 2017.
- 2016 **Haichuan Yang**, Ryohei Fujimaki, Yukitaka Kusumura, Ji Liu. Online Feature Selection: A Limited-Memory Substitution Algorithm and Its Asynchronous Parallel Variation. *In ACM SIGKDD Conferences on Knowledge Discovery and Data Mining (SIGKDD)*, 2016.
- 2016 **Haichuan Yang**, Yijun Huang, Lam Tran, Ji Liu, Shuai Huang. On Benefits of Selection Diversity via Bilevel Exclusive Sparsity. *In IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2016.
- 2016 **Haichuan Yang**, Xiao Bai, Yanzhen Liu, Yanyang Wang, Lu Bai, Jun Zhou, Wenzhong Tang. Maximum Margin Hashing with Supervised Information. *Multimedia Tools and Applications*, 2016, Volume 75, Issue 7, pp. 3955-3971, 2016.
- 2014 **Haichuan Yang**, Xiao Bai, Jun Zhou, Peng Ren, Zhihong Zhang, Jian Cheng. Adaptive Object Retrieval with Kernel Reconstructive Hashing. *In IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, pp. 1955-1962, 2014.
- 2014 Xiao Bai, **Haichuan Yang**, Jun Zhou, Peng Ren, Jian Cheng. Data-dependent Hashing based on p-stable Distribution. *In IEEE Transactions on Image Processing (TIP)*, IEEE, volume 23, pp. 5033-5046, 2014.

- 2014 **Haichuan Yang**, Xiao Bai, Jun Zhou, Peng Ren, Jian Cheng, Lu Bai. Semi-randomized Hashing for Large Scale Data Retrieval. *In International Conference on Data Science and Advanced Analytics (DSAA)*, 2014.
- 2013 **Haichuan Yang**, Xiao Bai, Chuntian Liu, Jun Zhou. Label Propagation Hashing based on p-stable Distribution and Coordinate Descent. *In IEEE International Conference on Image Processing (ICIP)*, 2013.

SERVICES

Reviewer of AAAI 2020, NeurIPS 2019, ICCV 2019, AAAI 2019, CVPR 2019.

HONORS AND AWARDS

ICLR Travel Award, 2019
Outstanding Master Dissertation Award of Beihang University, 2015
Chinese National Scholarship, 2014
Google Excellence Scholarship, 2014

TEACHING EXPERIENCE

Teaching assistant of
2018 CSC 458 - Parallel and Distributed Systems
2017 CSC 440 - Data Mining
2016 CSC 576 - Advanced Machine Learning and Optimization

COURSEWORK

Operating System, Big Data Analytics, Machine Learning, Parallel and Distributed Systems, Advanced Algorithms, Computational Complexity, Machine Vision, Deep Learning and Graphical Models.

TECHNICAL STRENGTHS

Programming Languages	Python [*] , C [*] , Matlab [*] , C++ [†] , Java [†]
Frameworks & Libraries	PyTorch [*] , Tensorflow [†] , pthreads [†] , MPI [†] , Hadoop [†]
Tools	Git [*] , Vim [*] , L ^A T _E X [*]

(* Proficient. † Familiar.)