Xiaohan Chen

Contact

E-mail: chernxh@tamu.edu
Homepage: xiaohanchen.com
Office Address: Room 407, H.R. Bright Building, College Station, TX, 77843-3112

Education Background

Texas A&M University   **College Station, TX, U.S.**
Ph.D. in Computer Science   Aug, 2017 — present
Supervisor: Prof. Zhangyang (Atlas) Wang

University of Science and Technology of China   **Hefei, Anhui, China**
B.S. in Mathematics and Applied Mathematics   Sep, 2013 — Jun, 2017
B.E. in Computer Science (Minor Degree)

Professional Experience

Research Assistant   Aug, 2017 — Aug, 2018
The Department of Computer Science and Engineering
Texas A&M University, College Station, TX, U.S.
Supervisor: Prof. Zhangyang (Atlas) Wang

Teaching Assistant   Aug 2018 — May, 2019
The Department of Computer Science and Engineering
Texas A&M University, College Station, TX, U.S.
Courses: CSCE 633 - Machine Learning, Fall 2018 and Spring 2019
Instructors: Prof. Bobak J. Mortazavi and Prof. Zhangyang (Atlas) Wang

Research Intern   Aug, 2017 — Aug, 2018
Max Planck Institute for Intelligent Systems, Tübingen, Germany
Supervisor: Dr. Krikamol Muandet and Dr. Siyu Tang

Research Interests

- *Machine Learning*
  - *Sparse and low-rank models*: solving inverse problems via learning-based approaches with guarantees; sparse learning for energy-effcient models.
- *Deep Learning Theories*
- *Computer Vision*
- *Meta Learning*
- *Optimization*
  - *Sparse optimization*: iterative algorithms in sparse coding and compressive sensing.

Conference Publications

* The authors equally contributed to the paper.

1. A new submission to ICLR 2020.

2. A new submission to SysML 2020.

3. Z. Jiang*, Y. Wang*, **X. Chen***, P. Xu, Y. Zhao, Y. Lin, Z. Wang, "E2-Train: Energy-Efficient Deep Network Training with Data-, Model-, and Algorithm-Level Saving", *In Proceedings of Advances in Neural Information Processing Systems* (**NeurIPS**), 2019.

4. E. Ryu, J. Liu, S. Wang, **X. Chen**, Z. Wang, W. Yin, "Plug-and-Play Methods Provably Converge with Properly Trained Denoisers", *International Conference on Machine Learning* (**ICML**), 2019.

5. J. Liu*, **X. Chen***, Z. Wang, W. Yin, "ALISTA: Analytic Weights Are As Good As Learned Weights in LISTA", *International Conference on Learning Representations* (**ICLR**), 2019.

6. **X. Chen***, J. Liu*, Z. Wang, W. Yin, "Theoretical Linear Convergence of Unfolded ISTA and Its Practical Weights and Thresholds", *In Proceedings of Advances in Neural Information Processing Systems* (**NeurIPS**), 2018.

7. N. Bansal, **X. Chen**, Z. Wang, "Can We Gain More from Orthogonality Regularizations in Training Deep Networks?", In Proceedings of Advances in Neural Information Processing Systems (**NeurIPS**), 2018.

Research Projects

Kernel Methods Meet Deep Neural Networks
Jun, 2019 — Nov, 2019
Supervisor: Dr. Krikamol Muandet and Dr. Siyu Tang, Max Planck Institute for Intelligent Systems
- Kernelizing deep representation.
- Improve deep generative models with kernels.

Deep Models Based on Iterative Compressive Sensing Algorithms
Aug, 2017 — present
Supervisor: Prof. Zhangyang (Atlas) Wang, TAMU
- Unfold and truncate iterative algorithms in compressive sensing into deep models to certain depth.
- Proved the theoretical linear convergence under mild assumptions when we properly select the weights and thresholds in iterative frameworks.
- Proposed a support selection mechanism inspired by optimization insights that significantly boost the performance.

Orthogonal and Lipschitz Regularizations on Deep Models
Aug, 2017 — present
Supervisor: Prof. Zhangyang (Atlas) Wang, TAMU
- Stabilize and accelerate the training process of deep learning models by enforcing orthogonal regularizations which are inspired by sparse optimization.
- Other forms of regularizations/constraints on the deep learning models such as Lipschitz continuity for better performance and theoretical properties.
- Align the deep learning models to the theory in optimization algorithms such as ADMM using the developed regularizations, to attain the theoretical guarantee and the good performance simultaneously.

Glasses Editing Using Generative Adversarial Networks (Undergraduate Thesis)
Jan, 2017 — Jun, 2017
Supervisor: Prof. Juyong Zhang, School of Mathematical Science, USTC
- Use generative adversarial networks (GAN) to remove glasses from facial images with glasses and add glasses to those without glasses.
- Construct my own model of GAN and verify its feasibility with experiments.

Honors and Awards

Scholarships

- ICLR Travel Award   Mar, 2019
- NeurIPS Travel Award   Oct, 2018
- AAAI Student Scholarship   Dec, 2017
- Outstanding New Student Award, **Top Class Award**   Sep, 2013

Others
- Future Net, HUAWEI CodeCraft Coding Contest, **Top 8 in East China**   May, 2016
- COMAP's Mathematical Contest in Modeling (MCM), **Honorable Mention**   Apr, 2016
- RoboGame of USTC, **the 2nd place**   Nov, 2015
- Outstanding Young Volunteer, USTC   Jul, 2014

Services

- *Reviewer*, ICCV 2019
- *Reviewer*, IEEE Signal Processing Letters
- *Reviewer*, NeurIPS 2019
- *Student Volunteer*, AAAI 2018
- *Reviewer*, WACV 2019

Technical Skills

Computer Languages	C, C++, Python, Matlab
Protocols & APIs	XML, JSON
Databases	PostgreSQL
Tools	Git, Vim, Visual Studio, Mathematica
LaTeX	