Haoming Jiang

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Education

2017-Present Georgia Institute of Technology
Ph.D. in Machine Learning (Expected)

2013-2017 University of Science and Technology of China
B.S. in Mathematics and Computer Science (Ranking: 2/63)

Research Interest

Deep Learning, Adversarial Machine Learning, Large-scale Nonconvex Optimization, Open Source Software Development for Scientific Computing.

Preprints and Publications

1. **Learning to Defense by Learning to Attack**
   Zhehui Chen*, **Haoming Jiang***, Bo Dai, and Tuo Zhao (*Equal Contribution)
   Working Paper

2. **Boosting Pathwise Coordiante Optimization: Sequential Screening and Proximal Newton Subroutine**
   Haoming Jiang, Xingguo Li, Jason Ge, Mengdi Wang, Mingyi Hong, and Tuo Zhao
   Working Paper

3. **On Fast Convergence of Proximal Algorithms for SQRT-Lasso Optimization: Don't Worry About Its Nonsmooth Loss Function**
   Xingguo Li, **Haoming Jiang**, Jarvis Haupt, Raman Arora, Han Liu, Mingyi Hong, and Tuo Zhao
   Submitted, 2018

4. **On Computation and Generalization of GANs under Spectrum Control**
   Haoming Jiang, Zhehui Chen, Minshuo Chen, Feng Liu, Dingding Wang, and Tuo Zhao
   International Conference on Learning Representations (ICLR), 2019

5. **Picasso: A Sparse Learning Library for High Dimensional Data Analysis in R and Python**
   Jason Ge*, Xingguo Li*, **Haoming Jiang**, Han Liu, Tong Zhang, Mengdi Wang, and Tuo Zhao
   Journal of Machine Learning Research (JMLR), 2018+

6. **Designing Deployable 3D Scissor Structures with Ball-and-Socket Joints**
   Xuejin Chen, **Haoming Jiang**, Tingting Xuan, Lihan Huang, Ligang Liu
   Computer Animation & Virtual Worlds (CAVW) , 2018

7. **Scissor-based 3D deployable contours**
   Haoming Jiang, Xuejin Chen, Tingting Xuan, Lihan Huang, Ligang Liu
   International Conference on Virtual Reality and Visualization (ICVRV), 2017

Research Experience

2018.7-Present **Robust Adversarial Learning** Develop a new adversarial training framework. The framework takes advantage of the learn-to-learn scheme and generates adversarial perturbation by a convolutional neural network.[1]

2018.2-Present	**Generative Adversarial Network** Develop a new framework for GANs to efficiently stabilize training. The framework allows flexible spectrum control over the network and further improves the image generation. [3]
2017.8-Present	**Nonconvex Sparse Learning** Develop new optimization algorithms for solving large-scale nonconvex sparse learning problems in high dimensions. The algorithms leverage the underlying statistical “models" and achieve faster rates of global convergence with optimal statistical guarantees. [2,4]
2017.8-Present	**Data Analytics Oriented Software Engineering** Develop sophisticated software engineering principle for designing highly reusable and user-friendly data analysis software. We approach this aim by developing a user-centered requirements engineering and software process design. Open source R/Python/C libraries are publicly available. [5]

PROJECTS

- NIPS 2018 Adversarial Vision Challenge (Attack Track top5)
- PICASSO: PathwIse CalibrAted Sparse Shooting algOrithm (R & Python Package)
- HUGE: High-Dimensional Undirected Graph Estimation (R Package)
- SAM: Sparse Additive Modelling (R Package)
- ESMOTE: Efficient Synthetic Minority Over-sampling Technique (R Package)
- GeoLab: a C++ Open Source 3D Mesh Processing Software

SKILLS

- C/C++, Python (Pytorch, Chainer, TensorFlow, GENSIM), R, Matlab, SQL, SCAD, OpenGL

AWARDS

2018	Google Summer of Code Award
2017, 2018	Wally George Fellowship
2016	National Scholarship (top 3%)