MEIXIA LIN

Engineering Systems and Design, Singapore University of Technology and Design
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https://linmeixia.github.io/

RESEARCH INTEREST

- Algorithm design for large-scale optimization problems in data science
- Convex regression problems
- Signal processing
- Stochastic optimization

EMPLOYMENT

Engineering Systems and Design,
Singapore University of Technology and Design *Jun. 2022 - Present*

- Assistant Professor

Institute of Operations Research and Analytics,
National University of Singapore *Jun. 2021 - May. 2022*

- Research Fellow
- Mentors: Professor Kim-Chuan Toh, Professor Subhroshekhar Ghosh

Department of Mathematics,
National University of Singapore *Nov. 2020 - May. 2021*

- Research Fellow
- Mentors: Professor Kim-Chuan Toh, Professor Subhroshekhar Ghosh

CriAT–Deep Credit Analytical Technologies, Singapore *May. 2019 - Jul. 2019*

- Research Intern

EDUCATION

National University of Singapore, Singapore *Aug. 2016 - Oct. 2020*

- Ph.D. in Department of Mathematics
- Supervisors: Professor Kim-Chuan Toh, Professor Chao Zhou
- Thesis: Efficient Second-order Algorithms for Structured Convex Composite Programming

Nanjing University, China *Sep. 2012 - Jun. 2016*

- B.S. in Information and Computing Science

PUBLICATIONS

† equal contribution or alphabetical order; * corresponding author.

1. Subhroshekhar Ghosh, **Meixia Lin***, and Dongfang Sun, *Signal analysis via the stochastic geometry of spectrogram level sets*, IEEE Transactions on Signal Processing, 70 (2022), pp. 1104–1117.
2. **Meixia Lin***, Defeng Sun, and Kim-Chuan Toh, *An augmented Lagrangian method with constraint generation for shape-constrained convex regression problems*, Mathematical Programming Computation 14.2 (2022), pp. 223–270.

3. Rémi Bardenet†, Subhroshekhar Ghosh†*, and **Meixia Lin**†*, *Determinantal point processes based on orthogonal polynomials for sampling minibatches in SGD*, in Conference on Neural Information Processing Systems (NeurIPS), 2021. (**Spotlight** presentation, less than 3% acceptance rate)

4. **Meixia Lin**, Yong-Jin Liu*, Defeng Sun, and Kim-Chuan Toh, *Efficient sparse semismooth Newton methods for the clustered lasso problem*, SIAM Journal on Optimization, 29 (2019), pp. 2026–2052.

PREPRINTS

† equal contribution or alphabetical order; * corresponding author.

1. Zhenning Cai, Bo Lin*, and **Meixia Lin**, *A positive and moment-preserving Fourier spectral method*, submitted to SIAM Journal on Numerical Analysis (under 1st review), 2023.

2. **Meixia Lin**, and Yangjing Zhang*, *DNNLasso: Scalable graph learning for matrix-variate data*, submitted (under review), 2023.

3. **Meixia Lin**†, Yancheng Yuan†, Defeng Sun*, and Kim-Chuan Toh, *A Highly Efficient Algorithm for Solving Exclusive Lasso Problems*, submitted to Optimization Methods and Software (under 2nd review), 2022.

4. **Meixia Lin**, Yancheng Yuan*, Defeng Sun, and Kim-Chuan Toh, *Adaptive sieving with PPDNA: Generating solution paths of exclusive lasso models*, submitted to Mathematical Programming (under 2nd review), 2020.

5. **Meixia Lin**, Defeng Sun, Kim-Chuan Toh, and Chengjing Wang*, *Estimation of sparse Gaussian graphical models with hidden clustering structure*, submitted to Journal of Machine Learning Research (under 3rd review), 2020.

TEACHING EXPERIENCES

Singapore University of Technology and Design

- 40.319 Statistical and Machine Learning *Spring 2023*
- 10.022 Modelling Uncertainty *Autumn 2022*
- 40.016 The Analytics Edge *Summer 2022*

National University of Singapore

- Teaching Assistant *Aug. 2017 - May. 2020*

CONSULTING PROJECT

Tokopedia *Jan. 2022 - Present*

PROFESSIONAL ACTIVITIES

Minisymposium Organizer in International Conferences

- Chair, Minisymposium on "Recent Advances in Structured Non-Smooth Optimization" (virtual), SIAM Conference on Optimization 2021 (OP21), Jul. 20–23, 2021.

Invited Talks

- "*Sampling minibatches in SGD – A DPP based approach via Orthogonal Polynomials*", Workshop on Optimization in the Big Data Era, Singapore, Dec. 05–16, 2022.
- "*Signal analysis via the stochastic geometry of spectrogram level sets*", Workshop on Determinantal and Permanental Point Processes, Quantum Physics, and Signal Processing, Lyon, France, May. 30–Jun. 10, 2022.

- "*Estimation of sparse Gaussian graphical models with hidden clustering structure*" (virtual), SIAM Conference on Optimization 2021 (OP21), Jul. 20–23, 2021.
- "*Adaptive sieving with PPDNA: Generating solution paths of exclusive lasso models*" (virtual), Forum on Operations Research and Information 2020, Beijing, China, Nov. 23–26, 2020.
- "*Efficient sparse semismooth Newton methods for the clustered lasso problem*", Workshop on Matrix Optimization 2019, Beijing, China, Nov. 29–30, 2019.
- "*A dual Newton based preconditioned proximal point algorithm for exclusive lasso models*", The Sixth International Conference on Continuous Optimization, Berlin, Germany, Aug. 3–8, 2019.
- "*Efficient sparse semismooth Newton methods for the clustered lasso problem* ", International Symposium on Mathematical Programming 2018, Bordeaux, France, Jul. 1–6, 2018.

SERVICES

Committee Services (in ESD, SUTD)

- Focus Track Lead of Business Analytics and Operations Research
- Admissions Selection Committee
- Outreach (Workshop/Talk)
- Capstone Scoping
- SHARP Interviews/Supervision

University Services

- **Vice president** of NUS SIAM Student Chapter, Jul. 2019 – Jun. 2020.

RESEARCH GRANTS

- Principal Investigator, SUTD KICKSTARTER INITIATIVE (SKI) (2022-2025), S$477k.

HONORS AND AWARDS

- **Best Graduate Researcher Award** in Department of Mathematics, NUS, Singapore, 2020.
- Outstanding Graduate Award, Nanjing University, China, 2016.
- First-class Scholarship of Top-notch Student Training Plan, China, 2015.
- First-class People's Scholarship, China, 2014.
- **National Scholarship**, China, 2013.