

# MEIXIA LIN

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<https://linmeixia.github.io/>

## RESEARCH INTEREST

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

## EMPLOYMENT

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**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

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**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

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<sup>†</sup> equal contribution or alphabetical order; \* corresponding author.

1. Zhenning Cai, Bo Lin\*, and **Meixia Lin**, *A positive and moment-preserving Fourier spectral method*, to appear in SIAM Journal on Numerical Analysis, 2023.
2. **Meixia Lin**<sup>†</sup>, Yancheng Yuan<sup>†</sup>, Defeng Sun\*, and Kim-Chuan Toh, *A highly efficient algorithm for solving exclusive lasso problems*, to appear in Optimization Methods and Software, 2023.

3. Subhroshekhar Ghosh, **Meixia Lin**<sup>\*</sup>, and Dongfang Sun, *Signal analysis via the stochastic geometry of spectrogram level sets*, IEEE Transactions on Signal Processing, 70 (2022), pp. 1104–1117.
4. **Meixia Lin**<sup>\*</sup>, 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.
5. Rémi Bardenet<sup>†</sup>, Subhroshekhar Ghosh<sup>†\*</sup>, and **Meixia Lin**<sup>†\*</sup>, *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)
6. **Meixia Lin**, Yong-Jin Liu<sup>\*</sup>, 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.

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## PREPRINTS

<sup>†</sup> equal contribution or alphabetical order; <sup>\*</sup> corresponding author.

1. Yancheng Yuan<sup>†</sup>, **Meixia Lin**<sup>†\*</sup>, Defeng Sun, and Kim-Chuan Toh, *Adaptive sieving: A dimension reduction technique for sparse optimization problems*, 2023.
2. **Meixia Lin**, Yancheng Yuan<sup>\*</sup>, Defeng Sun, and Kim-Chuan Toh, *Adaptive sieving with PPDNA: Generating solution paths of exclusive lasso models*, 2020.
3. **Meixia Lin**, Defeng Sun, Kim-Chuan Toh, and Chengjing Wang<sup>\*</sup>, *Estimation of sparse Gaussian graphical models with hidden clustering structure*, 2020.

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## 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*

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## CONSULTING PROJECT

- Tokopedia** *Jan. 2022 - Present*

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## 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”, 10th International Congress on Industrial and Applied Mathematics, Tokyo, Japan, Aug. 20–25, 2023.
- “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 Permanent 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

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### Committee Services (in ESD, SUTD)

- Research And Scholarly Excellence (RASE) Committee
- Taskforce to review AI in ESD curriculum
- 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

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- Principal Investigator, TL@SUTD SEED RESEARCH PROJECT GRANT (2023-2024), S\$96k.
- Principal Investigator, SUTD KICKSTARTER INITIATIVE (SKI) (2022-2025), S\$477k.

## HONORS AND AWARDS

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- **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.