

# JINGWEI LIANG

DAMTP, Centre for Mathematical Sciences, Wilberforce Road, Cambridge, CB3 0WA–UK  
☎ +44 1223760454 • ✉ jl993@cam.ac.uk • 🌐 <https://jliang993.github.io/>

## EMPLOYMENT

<b>University of Cambridge</b> <i>Postdoc Research Associate</i>	<b>Cambridge, UK</b> <i>04/2017–Now</i>
<b>ENSICAEN, CNRS</b> <i>Doctoral Student</i>	<b>Caen, France</b> <i>10/2013–10/2016</i>
<b>ENSICAEN, CNRS</b> <i>Internship Researcher</i>	<b>Caen, France</b> <i>12/2012–09/2013</i>

## EDUCATION

<b>Normandie University, UNICAEN, ENSICAEN, CNRS</b> <i>PhD in Applied Mathematics, funded by <math>\Sigma</math>-Vision ERC starting grant</i> <b>Title:</b> <i>Convergence Rates of First-Order Splitting Methods</i> <b>Supervisors:</b> Jalal Fadili (CNRS, ENSICAEN) and Gabriel Peyré (CNRS, ENS-Paris) <b>Viva date:</b> 17 October 2016 <b>Committee:</b> Hedy Attouch (Chair, Université de Montpellier, France), Antonin Chambolle (CMAP, École Polytechnique, France), Adrian Lewis (Cornell University, USA), Russell Luke (University of Göttingen, Germany), Jérôme Malick (CNRS, Université Grenoble Alpes, France), Marc Teboulle (Tel-Aviv University, Israel)	<b>Caen, France</b> <i>10/2013–10/2016</i>
<b>Shanghai Jiao Tong University</b> <i>M.S. in Applied Mathematics</i> <b>Title:</b> <i>Wavelet Frame based Color Image Demosaicing (in Chinese)</i> <b>Supervisor:</b> Xiaoqun Zhang	<b>Shanghai, China</b> <i>09/2010–03/2013</i>
<b>Nanjing University of Posts and Telecommunications</b> <i>B.S. in Electrical &amp; Information Engineering</i>	<b>Nanjing, China</b> <i>09/2006–06/2010</i>

## PUBLICATION

### Preprints & in preparation.....

- J. Liang, C. Schönlieb, “Improving FISTA: Faster, Smarter and Greedier”.
- A. Lewis, J. Liang, “Partly Smoothness and Constant Rank”.
- C. Molinari\*, J. Liang\* and J. Fadili, “Convergence Rates of Forward–Douglas–Rachford Splitting Method”. (\* equal contribution)

### Journal Papers.....

- J. Liang, J. Fadili and G. Peyré, “Local Linear Convergence of Primal–Dual Splitting Methods”, *Optimization*, 67 (6), 821–853, 2018.
- J. Liang, J. Fadili and G. Peyré, “Activity Identification and Local Linear Convergence of Forward–Backward-type Methods”, *SIAM Journal on Optimization*, 27 (1), 408–437, 2017.
- J. Liang, J. Fadili and G. Peyré, “Local Convergence Properties of Douglas–Rachford and Alternating Direction Method of Multipliers”, *Journal of Optimization Theory and Applications*, 72 (3), 874–913, 2017.
- J. Liang, J. Fadili and G. Peyré, “Convergence Rates with Inexact Non-expansive Operators”, *Mathematical Programming series A*, 159 (1), 403–434, 2016.
- J. Liang, X. Zhang, “Retinex by Higher Order Total Variation  $L^1$  Decomposition”, *Journal of Mathematical Imaging and Vision*, 52(3):345–355, 2015.

- J. Liang, J. Ma and X. Zhang, “Seismic Data Restoration via Data-driven Framelet”, *Geophysics*, 79(3):65-74, 2014.
- J. Liang, J. Li, Z. Shen and X. Zhang, “Wavelet Frame based Color Image Demosaicing”, *Inverse Problems and Imaging*, 7(3):777-794, 2013.

#### Conference Proceedings.....

- J. Liang and C. Schönlieb, “Faster FISTA”, European Signal Processing Conference, 2018.
- C. Poon\*, J. Liang\* and C. Schönlieb, “Local Convergence Properties of SAGA/Prox-SVRG and Acceleration”, International Conference on Machine Learning, 2018. (\* equal contribution)
- J. Liang, J. Fadili and G. Peyré, “A Multi-step Inertial Forward–Backward Splitting Method for Non-convex Optimization”, *Advances in Neural Information Processing Systems*, 2016.
- J. Liang, J. Fadili and G. Peyré, “Identification en Temps Fini et Convergence Linéaire Locale de l’Algorithme Proximal Implicite-Explicite Inertiel”, *Colloque sur le Traitement du Signal et des Images*, 2015. (**Oral**)
- J. Liang, J. Fadili and G. Peyré and R. Luke, “Activity Identification and Local Linear Convergence of Douglas–Rachford/ADMM under Partial Smoothness”, *International Conference on Scale Space and Variational Methods in Computer Vision*, 2015. (**Oral**)
- J. Liang, J. Fadili and G. Peyré, “Locally Linear Convergence of Forward–Backward under Partial Smoothness”, *Advances in Neural Information Processing Systems*, 2014.
- J. Liang, J. Fadili and G. Peyré, “On the Convergence Rates of Proximal Splitting Algorithms”, *IEEE Int. Conf. on Image Processing*, 2014. (**Top 10% Papers**)

#### TALKS AND PRESENTATIONS

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##### Invited Talks.....

- “Make FISTA Faster Again”, *SIAM Conference on Imaging Science*, Bologna, Italy, June 5-8 2018.
- “Activity Identification and Local Linear Convergence of Forward–Backward-type Methods”, *Optimization*, Portugal, Lisbon, 6-8 September 2017.
- “MUSTARD: a Multi-step Inertial Operator Splitting Method”, *Workshop on Signal Processing, Optimization and Compressed Sensing (SPOC)*, Nankai University, Tianjin, China, 17-21 December 2016.
- “Activity Identification and Local Linear Convergence of Forward–Backward-type Methods”, *Problèmes Inverses, Contrôle et Optimisation de Formes (PICO)*, Autrans, France, 1-3 June 2016.

##### Conference Presentations.....

- “Local Linear Convergence of Primal–Dual splitting methods for Low Complexity Regularization”: *Signal Processing with Adaptive Sparse Structured Representations (SPARS)*, Portugal, Lisbon, 4-8 June 2017.
- “Local Linear Convergence of Forward–Backward-type methods and Douglas–Rachford/ADMM for Low Complexity Regularization”: *Signal Processing with Adaptive Sparse Structured Representations (SPARS)*, Cambridge, UK, 6-9 July 2015.
- “Activity Identification and Local Linear Convergence of Forward–Backward and Variants”, *Journées annuelles 2014 du GdR MOA, XLIM*, Université de Limoges, France, 3-5 December 2014.
- “Iteration-Complexity of Inexact Proximal Splitting Algorithms”, *International Traveling Workshop on Interactions between Sparse models and Technology (iTWIST)*, Namur, Belgium, 27-29 August 2014.

##### Seminar Talks.....

- “A Local Perspective of Stochastic Optimisation methods”, *Institute of Natural Sciences*, Shanghai Jiao Tong University, 9 November 2017.
- “Activity Identification and Local Linear Convergence of Forward–Backward-type Methods”, *BICMR*, Peking University, 9 January 2017.

- *“Partial Smoothness: a Powerful Tool for Algorithm Analysis and Design”*, University of Seville, 14 December 2016.
- *“Local linear convergence of Forward–Backward-type methods”*, Institute of Natural Sciences, Shanghai Jiao Tong University, 29 July 2015.
- *“Local linear convergence of proximal splitting methods”*, GT Statistique et Imagerie, Paris-Dauphine, 25 June 2015.
- *“Convergence rate with inexact non-expansive operators”*, Institute of Natural Sciences, Shanghai Jiao Tong University, 31 July 2014.

## PROFESSIONAL SERVICES

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### Symposium Co-organized.....

- *Minisymposium “Approaches for Fast Optimisation in Imaging and Inverse Problems”*, SIAM Conference on Imaging Science, Bologna, Italy, June 5-8 2018. Co-organised with M. Nikolova (CNRS, ENS-Cachan) and C. Schönlieb (University of Cambridge).

### Conference Referee.....

- IEEE CAMSAP 2015 · SPARS 2015 · ECC 2016 · NIPS 2016.

### Journal Referee.....

- Journal of Computational Mathematics · Inverse Problem and Imaging
- Applied Mathematics and Computation · Applied Mathematical Modelling.
- ESAIM: Control, Optimisation and Calculus of Variations
- IEEE Trans. on Image Processing · IEEE Trans. on Signal Processing.
- Computational Optimization and Applications · Journal of Mathematical Imaging and Vision · Journal of Optimization Theory and Applications · Optimization Letter · Optimization Methods and Software · Mathematical Programming.
- SIAM Journal on Imaging Sciences · SIAM Journal on Numerical Analysis · SIAM Journal on Optimization.