

## Laurent Condat — List of publications

August 29, 2024

### Preprints

- [U10] G. Meinhardt, K. Yi, L. Condat, and P. Richtárik, “Prune at the Clients, Not the Server: Accelerated Sparse Training in Federated Learning,” preprint arXiv:2405.20623, 2024.
- [U9] L. Condat and P. Richtárik, “A Simple Linear Convergence Analysis of the Point-SAGA Algorithm,” preprint arXiv:2405.19951, 2024.
- [U8] A. Sadiev, L. Condat, and P. Richtárik, “Stochastic Proximal Point Methods for Monotone Inclusions under Expected Similarity,” preprint arXiv:2405.14255, 2024.
- [U7] K. Yi, G. Meinhardt, L. Condat, P. Richtárik, “FedComLoc: Communication-Efficient Distributed Training of Sparse and Quantized Models,” preprint arXiv:2403.09904, 2024.
- [U6] L. Condat, A. Maranjyan, P. Richtárik, “LoCoDL: Communication-Efficient Distributed Learning with Local Training and Compression,” preprint arXiv:2403.04348, 2024.
- [U5] L. Guo, S. A. Alghunaim, K. Yuan, L. Condat, and J. Cao, “Revisiting Decentralized ProxSkip: Achieving Linear Speedup,” preprint arXiv:2310.07983, 2023.
- [U4] G. Perez, L. Condat, and M. Barlaud, “Near-Linear Time Projection onto the  $l_1$ -infinity Ball: Application to Sparse Autoencoders,” preprint arXiv:2307.09836, 2023.
- [U3] K. Yi, L. Condat, and P. Richtárik, “Explicit Personalization and Local Training: Double Communication Acceleration in Federated Learning,” preprint arXiv:2305.13170, 2023.
- [U2] L. Condat, I. Agarský, G. Malinovsky, and P. Richtárik, “TAMUNA: Doubly Accelerated Federated Learning with Local Training, Compression, and Partial Participation,” preprint arXiv:2302.09832, 2023. Note: presented at the Int. Workshop on Federated Learning in the Age of Foundation Models in Conjunction with NeurIPS 2023 (FL@FM-NeurIPS’23), New Orleans, USA, Dec. 2023.
- [U1] L. Condat, I. Agarský, and P. Richtárik, “Provably Doubly Accelerated Federated Learning: The First Theoretically Successful Combination of Local Training and Compressed Communication,” preprint arXiv:2210.13277, 2022.

### International peer-reviewed journals

- [J35] D. Picone, M. Dalla Mura, and L. Condat, “Joint demosaicing and fusion of multiresolution coded acquisitions: A unified image formation and reconstruction method,” *IEEE Transactions on Computational Imaging*, vol. 9, pp. 335–349, 2023.
- [J34] L. Condat, D. Kitahara, A. Contreras, and A. Hirabayashi, “Proximal splitting algorithms for convex optimization: A tour of recent advances, with new twists,” *SIAM Review*, vol. 65, no. 2, pp. 375–435, 2023.
- [J33] A. Salim, L. Condat, K. Mishchenko, and P. Richtárik, “Dualize, split, randomize: Toward fast nonsmooth optimization algorithms,” *J. Optimization Theory and Applications*, vol. 195, pp. 102–130 Oct. 2022. Note: presented at the NeurIPS Workshop on Optimization for Machine Learning (OPT), Dec. 2020.
- [J32] L. Condat, “Tikhonov regularization of circle-valued signals,” *IEEE Transactions on Signal Processing*, vol. 70, pp. 2775–2782, June 2022.

- [J31] L. Condat, G. Malinovsky, and P. Richtárik, “Distributed proximal splitting algorithms with rates and acceleration,” *Frontiers in Signal Processing*, vol. 1, Jan. 2022. Special issue “Distributed Signal Processing and Machine Learning for Communication Networks”. Note: presented at the NeurIPS Workshop on Optimization for Machine Learning (OPT), Dec. 2020.
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- [J29] K. Polisano, M. Clausel, V. Perrier, and L. Condat, “Riesz-based orientation of localizable Gaussian fields,” *Applied and Computational Harmonic Analysis*, vol. 50, pp. 353–385, Jan. 2021.
- [J28] L. Condat, “Atomic norm minimization for decomposition into complex exponentials and optimal transport in Fourier domain,” *Journal of Approximation Theory*, vol. 258, Oct. 2020.
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- [J26] D. Orive-Miguel, L. Hervé, L. Condat, and J. Mars, “Improving Localization of Deep Inclusions in Time-Resolved Diffuse Optical Tomography,” *Applied Sciences*, vol. 9, no. 24, pp. 5468, 2019. Special issue “New Horizons in Time-Domain Diffuse Optical Spectroscopy and Imaging”.
- [J25] M. Foare, N. Pustelnik, and L. Condat, “Semi-linearized proximal alternating minimization for a discrete Mumford-Shah model,” *IEEE Transactions on Image Processing*, vol. 29, no. 1, pp. 2176–2189, Dec. 2019.
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- [J21] N. Pustelnik and L. Condat, “Proximity operator of a sum of functions; application to depth map estimation,” *IEEE Signal Processing Letters*, vol. 24, no. 12, pp. 1827–1831, Dec. 2017.
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- [J10] L. Condat, “Reconstruction from non-uniform samples: A direct, variational approach in shift-invariant spaces,” *Digital Signal Processing*, vol. 23, no. 4, pp. 1277–1287, 2013.
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- [CI55] L. Condat, K. Yi, and P. Richtárik, “EF-BV: A unified theory of error feedback and variance reduction mechanisms for biased and unbiased compression in distributed optimization,” *NeurIPS*, Dec. 2022, New Orleans, LA, USA. In *Advances in Neural Information Processing Systems*, vol. 35, pp. 17501–17514.

- [CI54] L. Condat and P. Richtárik, “MURANA: A generic framework for stochastic variance-reduced optimization,” *Mathematical and Scientific Machine Learning (MSML) Conference*, Aug. 2022, PMLR vol. 190, pp. 81–96. Note: also presented at the ICML Workshop on Federated Learning for User Privacy and Data Confidentiality (FL-ICML’21), July 2021.
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- [CI51] J. Baderot, M. Desvignes, L. Condat, and M. Dalla Mura, “Tree of shapes cut for material segmentation guided by a design,” *IEEE ICASSP*, May 2020.
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- [CI47] D. Kitahara, L. Condat, and A. Hirabayashi, “One-dimensional edge-preserving spline smoothing for estimation of piecewise smooth functions,” *IEEE ICASSP*, May 2019, Brighton, UK.
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- [CI45] D. Picone, L. Condat, and M. Dalla Mura, “Analysis of masks for compressed acquisitions in variational-based pansharpening,” *5th International Workshop on Compressed Sensing applied to Radar, Multimodal Sensing, and Imaging (CoSeRa)*, Sept. 2018, Siegen, Germany.
- [CI44] D. Picone, M. Dalla Mura, and L. Condat “Pansharpening of images acquired with color filter arrays,” *SPIE Photonics Europe – Unconventional Optical Imaging*, vol. 10677, Apr. 2018, Strasbourg, France.
- [CI43] M. Foare, N. Pustelnik, and L. Condat, “A new proximal method for joint image restoration and edge detection with the Mumford–Shah model,” *IEEE ICASSP*, Apr. 2018, Calgary, Canada.
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- [CI41] A. Tiard, L. Condat, L. Drumetz, J. Chanussot, W. Yin, and X. Zhu, “Robust linear unmixing with enhanced sparsity,” *IEEE ICIP*, Beijing, China, Sept. 2017.
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- [CI11] L. Condat and D. Van De Ville, "Fully reversible image rotation by 1-D filtering," *IEEE ICIP*, San Diego, USA, Oct. 2008.
- [CI10] A. Hirabayashi and L. Condat, "Towards a general formulation for over-sampling and under-sampling," *EUSIPCO*, Poznan, Poland, Sept. 2007.
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- [CI3] L. Condat, T. Blu, and M. Unser, "Beyond interpolation: Optimal reconstruction by quasi-interpolation," *IEEE ICIP*, Genoa, Italy, Sept. 2005.
- [CI2] L. Condat, D. Van de Ville, and T. Blu, "Hexagonal versus orthogonal lattices: A new comparison using approximation theory," *IEEE ICIP*, Genoa, Italy, Sept. 2005.
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- [CN17] L. Condat, “Transport optimal de mesures en domaine fréquentiel,” *GRETSI*, Aug. 2019, Lille, France.
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## Theses

- [T2] L. Condat, “Méthodes d’approximation pour la reconstruction de signaux et le redimensionnement d’images” [Approximation methods for signal reconstruction and image resizing], PhD thesis, INP Grenoble, Grenoble, France, Sept. 2006 [in French].
- [T1] L. Condat, “Étude des méthodes de réduction/agrandissement pour la compression d’images” [Study of reduction/enlargement methods for image compression], master’s thesis, INP Grenoble, Grenoble, France, June 2003 [in French].

## Research reports

- [R6] L. Condat, “Tikhonov Regularization of Sphere-Valued Signals,” research report arXiv:2207.12330, 2022.
- [R5] A. Albasyoni, M. Safaryan, L. Condat, and P. Richtárik, “Optimal Gradient Compression for Distributed and Federated Learning,” research report arXiv:2010.03246, 2020. Note: presented at the NeurIPS Workshop on Scalability, Privacy, and Security in Federated Learning (SpicyFL), Dec. 2020.
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