Shuyu Dong

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Education

June 2016–May 2021 **PhD**, Université catholique de Louvain, Louvain-la-Neuve, Belgium.
PhD with the FNRS–FRIA scholarship
Thesis title: Low-rank matrix and tensor completion using graph-based regularization
Advisors: P.-A. Absil, Kyle A. Gallivan

January 2016 **Master, ingénieur**, Télécom ParisTech, ENS, Ile-de-France, France.
Ingénieur Télécom and Master MVA: Machine learning and computer vision
Master thesis: Learning graph topologies for diffusion signal representation on graphs at EPFL, Lausanne, Switzerland. Advisor: P. Frossard

2014 **Ingénieur**, Ecole polytechnique, Palaiseau, France.

2011 **Licence Mathématiques**, Université Paris VI, Paris, France.

Positions and Professional Experience

2021–present **Postdoctoral researcher**, TAU Team at INRIA; Université Paris-Saclay, Gif-sur-Yvette, France.

2016–2020 **FNRS–FRIA doctoral scholarship**, Université catholique de Louvain, Louvain-la-Neuve, Belgium.

Apr–Aug 2014 **Research Internship**, Invoxia, Issy-les-Moulineaux, France.
Information geometric methods for real-time speaker diarization

Jul–Aug 2013 **Summer internship**, SDESS, Banque de France, Paris.
Parallel computing for sparse linear systems in CUDA

Research Interests

- Optimization on Riemannian manifolds and its applications: matrix and tensor completion, phase retrieval, principal & independent component analysis • Large-scale matrix/tensor decomposition • Kernel methods • Causal inference • Large-scale graph clustering, network embedding, synchronization • Neural networks

Computer Skills

- Programming: Python, Matlab, C/C++, Java, • ML/Opt packages: Manopt, Pymanopt, Scikit-Learn, Pytorch, Tensorflow, ROPTLIB, LINE, NetSMF, redsvd

Papers

- S. Dong, B. Gao, Y. Guan and F. Glineur. New Riemannian preconditioned algorithms for tensor completion via polyadic decomposition. *arXiv preprint arXiv:2101.11108*, pages 1–24, 2021. URL `https://arxiv.org/pdf/2101.11108.pdf`.

- Y. Guan, S. Dong, P.-A. Absil, and F. Glineur. Alternating minimization algorithms for graph-regularized tensor completion. *arXiv preprint arXiv:2008.12876*, pages 1–30, 2020. URL `https://arxiv.org/pdf/2008.12876.pdf`.

- S. Dong, P.-A. Absil, and K. A. Gallivan. Riemannian gradient descent methods for graph-regularized matrix completion. *Linear Algebra and its Applications*, 2020. URL `https://doi.org/10.1016/j.laa.2020.06.010`.

- S. Dong, P.-A. Absil, and K. A. Gallivan. Preconditioned Conjugate Gradient Algorithms for Graph Regularized Matrix Completion. In *European Symposium on Artificial Neural Networks (ESANN), pages 239–244*, 2019. URL `https://www.elen.ucl.ac.be/Proceedings/esann/esannpdf/es2019-133.pdf`.

- S. Dong, P.-A. Absil, and K. A. Gallivan. Graph learning for regularized low rank matrix completion. In *23rd International Symposium on Mathematical Theory of Networks and Systems (MTNS), pages 460–467*, 2018. URL `http://mtns2018.ust.hk/media/files/0153.pdf`.

- S. Dong, D. Thanou, P.-A. Absil, and P. Frossard. Learning sparse models of diffusive graph signals. In *European Symposium on Artificial Neural Networks (ESANN), pages 251–256*, 2017. URL `https://www.elen.ucl.ac.be/Proceedings/esann/esannpdf/es2017-116.pdf`.

Talks and Presentations

- Low-rank models 2020 Winter School (Poster presentation), Villars-sur-Ollon, Switzerland, January 2020.

- The International Council for Industrial and Applied Mathematics (ICIAM) 2019, Valencia, Spain, 2019.

- The 27th European Symposium on Artificial Neural Networks (ESANN), Bruges, Belgium, 2019.

- The 23rd International Symposium on Mathematical Theory of Networks and Systems (MTNS 2018), Hong Kong, China, 2018.

- The 25th European Symposium on Artificial Neural Networks (ESANN), Bruges, Belgium, 2017.

- The 36th Benelux Meeting on Systems and Control (Benelux Meeting 2017), Spa, Belgium, 2017.

- BeNet 2016, Louvain-la-Neuve, Belgium, 2016.

Software

• ROPTbox (public soon) • TC-Precon (tensor completion): `https://gitlab.com/shuyudong.x11/tcprecon`.

Languages

• English • French (operational proficiency) • Chinese (native speaker)

Teaching Experience

• Analyse 2 (assistant, 2020–2021) • Numerical Analysis 2 (assistant, 2016–2020) • Economie de l'Entreprise (assistant, 2016–2017)

Professional Services

Co-supervisor (with Prof. Absil) of Anuj Diwan (IIT) in summer internship 2019, *Graph-regularized matrix completion*, ICTEAM, UCLouvain.

Referee for journal/proceedings: • IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI) • EURASIP • EUSIPCO