LIANGZU PENG

[Homepage] [OpenReview] [Google Scholar] [lpenn@seas.upenn.edu] [+1 (667) 910 4063]

EDUCATION

University of Pennsylvania, Philadelphia, USA   August 2023 – Now
    Ph.D. in Electrical and System Engineering
    Advisor: Dr. René Vidal
    Thesis: TBD

Johns Hopkins Univerisity, Baltimore, USA   August 2021 – May 2023
    Ph.D. in Electrical and Computer Engineering
    Advisor: Dr. René Vidal
    (Transferred to UPenn)

ShanghaiTech Univerisity, Shanghai, China   September 2017 – June 2021
    M.S. in Computer Science
    Thesis: From Linear Regression Without Correspondences to Homomorphic Sensing

Zhejiang University, Hangzhou, China   September 2013 – June 2017
    B.Eng. in Measurement Control Technology and Instruments
    Thesis: Image Measurement Software for Visual Detection

WORK EXPERIENCE

Research Intern, Alibaba DAMO Academy, Bellevue, WA, USA   May 2023 – August 2023
    Mentors: Dr. Xinshang Wang, Dr. Wotao Yin

Research Assistant, Johns Hopkins University, Baltimore, USA   August 2021 – May 2023
    Advisor: Dr. René Vidal

Teaching Associate, NYU Shanghai, China   September 2020 – May 2021
    Instructor: Dr. Siyao Guo

Intern, NYU Shanghai, China   February 2020 – June 2020
    Instructor: Dr. Irith Hartman

PUBLICATIONS

First Author Papers.

1. Block Coordinate Descent on Smooth Manifolds
   LP and René Vidal
   [Preprint] [arXiv]

2. The Ideal Continual Learner: An Agent That Never Forgets
   LP, Paris V. Giampouras, and René Vidal
   [ICML 2023] [OpenReview] [CLVision Workshop 2023] [arXiv] [bib]

3. On the Convergence of IRLS and Its Variants in Outlier-Robust Estimation
   Highlight, 235/9155≈2.5% Acceptance Rate
   LP, Christian Kümmerle, and René Vidal
   [CVPR 2023] [pdf] [video] [slides] [bib]

4. Global Linear and Local Superlinear Convergence of IRLS for Non-Smooth Robust Regression
   LP, Christian Kümmerle, and René Vidal
   [NeurIPS 2022] [OpenReview] [arXiv] [code] [bib]

5. Semidefinite Relaxations of Truncated Least-Squares in Robust Rotation Search: Tight or Not
   Oral Presentation, 158/5803≈2.7% Acceptance Rate
   LP, Mahyar Fazlyab, and René Vidal
   [ECCV 2022] [arXiv] [slides] [poster] [talk video] [bib]

6. ARCS: Accurate Rotation and Correspondence Search
   Oral Presentation, 342/8161≈4.2% Acceptance Rate
   LP, Manolis C. Tsakiris, and René Vidal
   [CVPR 2022] [arXiv] [code] [slides] [talk video] [bib]

7. Homomorphic Sensing: Sparsity and Noise
   LP, Boshi Wang, and Manolis C. Tsakiris
   [ICML 2021] [pdf] [talk video] [bib]

8. Algebraically-Initialized Expectation Maximization for Header-Free Communication
   LP, Xuming Song, Manolis C. Tsakiris, Hayoung Choi, Laurent Kneip, and Yuanming Shi
   [ICASSP 2019] [pdf] [bib]

9. Homomorphic Sensing of Subspace Arrangements
   Applied and Computational Harmonic Analysis, 2021
   LP and Manolis C. Tsakiris
   [arXiv] [bib]

10. Linear Regression Without Correspondences via Concave Minimization
    IEEE Signal Processing Letters, 2020
    LP and Manolis C. Tsakiris
    [arXiv] [code] [bib]

Other Papers.
1. Efficient and Robust Point Cloud Registration via Heuristics-based Parameter Search
   Tianyu Huang, Haoang Li, *LP*, Yinlong Liu, and Yun-Hui Liu
   [Preprint]
   Submitted to IEEE Transactions on Pattern Analysis and Machine Intelligence

2. Outlier-Robust Orthogonal Regression on Manifolds
   Tianjiao Ding, *LP*, and René Vidal
   [Preprint]

3. Accelerating Globally Optimal Consensus Maximization in Geometric Vision
   Xinyue Zhang, *LP*, Wanting Xu, and Laurent Kneip
   [Preprint] [arXiv]
   Submitted to IEEE Transactions on Pattern Analysis and Machine Intelligence

4. HARD: Hyperplane ARangement Descent
   Tianjiao Ding, *LP*, and René Vidal
   [Preprint]

5. Unlabeled Principal Component Analysis and Matrix Completion

   Yunzhen Yao, *__LP__*, and Manolis C. Tsakiris

   [Preprint]

   Submitted to Journal of Machine learning Research

6. Unlabeled Principal Component Analysis

   Yunzhen Yao, *__LP__*, and Manolis C. Tsakiris

   [NeurIPS 2021] [OpenReview] [arXiv] [code] [bib]

7. Unsigned Matrix Completion

   Yunzhen Yao, *__LP__*, and Manolis C. Tsakiris

   [ISIT 2021] [pdf] [bib]

8. Homomorphic Sensing

   Manolis C. Tsakiris and *__LP__*

   [ICML 2019] [arXiv] [code] [bib]

9. An Algebraic-Geometric Approach to Linear Regression Without Correspondences

   IEEE Transactions on Information Theory, 2020

   Manolis C. Tsakiris, *__LP__*, Aldo Conca, Laurent Kneip, Yuanming Shi, and Hayoung Choi

   [arXiv] [code] [bib]

HONORS AND AWARDS

Top Reviewer @NeurIPS 2022	2022
Highlighted Reviewer @ICLR 2022	2022
The Dean's Fellowship @UPenn	August 2023 – Now
GRO Conference Grants @JHU	June 2022
MINDS PhD Fellowship @JHU	Spring 2022

TALKS

Low-rank Matrix Recovery From Unlabeled Data With Missing Entries
   @INFORMS Annual Meeting, Phoenix, Arizona [slides] — October 2023

The Ideal Continual Learner: An Agent That Never Forgets
   @AI TIME (Youth PhD Talk), Virtual [slides] — June 15, 2023

Fantastic Iteratively Reweighted Algorithms and Where to Find Them
   @SIAM Conference on Optimization, Seattle, Washington [slides] — June 1, 2023

A Tale of Two Villains: Bandit, Procrustes, and Their Regrets
   TheoriNet Retreat @Flatiron Institute, New York City [slides] — September 28, 2022

Rotation Search: Optimization Theory and Algorithms
   @AI TIME (Youth PhD Talk), Virtual [slides v4] — December 8, 2022
   @Center for Applied Mathematics of Henan Province, China, Virtual [slides v3] — September 23, 2022
   @Vision Lab Retreat, Johns Hopkins University [slides v2] — September 9, 2022
   @VITA, University of Texas at Austin, Virtual [slides v1] — August 17, 2022

Semidefinite Relaxations in Robust Rotation Search: Tight or Not
        @ECCV, Virtual [slides]   October 2022
        @ICCOPT, Bethlehem, Pennsylvania [slides]   July 2022

ARCS: Accurate Rotation and Correspondence Search
        @CVPR, New Orleans, Louisiana [slides] [talk video]   June 2022

PROFESSIONAL SERVICE

Organzer:

Mini-Symposium @SIAM Conference on Optimization   May 2023
        with Christian Kümmerle and René Vidal
        "Iteratively Reweighted Algorithms in Data Science: From Convexity to Nonconvexity"

Reviewer:

Conference on Uncertainty in Artificial Intelligence (2023)

International Conference on Computer Vision (2023)

IEEE International Conference on Acoustics, Speech and Signal Processing (2023)

International Conference on Artificial Intelligence and Statistics (2023)

Learning on Graphs Conference (2022)

European Conference on Computer Vision (2022)

Computer Vision and Pattern Recognition (2022, 2023)

International Conference on Learning Representations (2022, 2023)

Neural Information Processing Systems (2021 – 2023)

International Conference on Machine Learning (2021 – 2023)

zbMATH Open (2021 - 2023)

IEEE Transactions on Pattern Analysis and Machine Intelligence (1)

IEEE Transactions on Signal Processing (1)

IEEE Robotics and Automation Letters (1)

Transactions on Machine Learning Research

TEACHING

Recitation Instructor:

CSCI-SHU 220, Algorithms   Spring 2021, NYU-Shanghai

CSCI-SHU 220, Algorithms   Fall 2020, NYU-Shanghai

CSCI-SHU 2314, Discrete Mathematics   Spring 2020, NYU-Shanghai

Teaching Assistant:

SI 232, Subspace Learning   Fall 2020, ShanghaiTech

CSCI-SHU 220, Algorithms   Spring 2020, NYU-Shanghai

MATH 2111, Topological Data Analysis   Spring 2020, ShanghaiTech

SI 232, Subspace Learning   Fall 2019, ShanghaiTech

CS 133, Advanced C++ Programming   Spring 2019, ShanghaiTech

SI 192, Applied Algebraic Geometry   Spring 2019, ShanghaiTech

SI 112, Advanced Geometry[1]   Spring 2018, ShanghaiTech

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[1]Lecture notes available: http://www.liangzu.org/en/ag-notes.html