

LIANGZU PENG

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EDUCATION

- University of Pennsylvania*, Philadelphia, USA August 2023 – Now
 Ph.D. in Electrical and Systems Engineering
 Advisor: Dr. René Vidal
- Johns Hopkins University*, Baltimore, USA August 2021 – May 2023
 Ph.D. in Electrical and Computer Engineering
 (Transferred to UPenn)
- ShanghaiTech University*, 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
- Teaching Associate*, NYU Shanghai, China February 2020 – May 2021
 Instructors: Dr. Irith Hartman, Dr. Siyao Guo

PUBLICATIONS

(Co-)First Author Papers.

- ICL-TSVD: Bridging Theory and Practice in Continual Learning with Pre-trained Models
 \underline{LP} , Juan Elenter, Joshua Agterberg, Alejandro Ribeiro, René Vidal
[\[arXiv\]](#)
- Block Acceleration Without Momentum: On Optimal Stepsizes of Block Gradient Descent for Least-Squares
[Spotlight Presentation](#), 335/9473 \approx 3.5% Acceptance Rate
 \underline{LP} and Wotao Yin
[\[ICML 2024\]](#)
- Scalable 3D Registration via Truncated Entry-wise Absolute Residuals
 Tianyu Huang*, \underline{LP} *, René Vidal, and Yun-Hui Liu [*: Equal Contribution]
[\[CVPR 2024\]](#) [\[arXiv\]](#)
- HARD: Hyperplane ARangement Descent
 Tianjiao Ding*, \underline{LP} *, and René Vidal [*: Equal Contribution]
[\[CPAL 2024\]](#), [Oral Presentation](#)
- Block Coordinate Descent on Smooth Manifolds: Convergence Theory and Twenty-One Examples
 \underline{LP} and René Vidal
[\[arXiv\]](#)

6. The Ideal Continual Learner: An Agent That Never Forgets
LP, Paris V. Giampouras, and René Vidal
[ICML 2023] [OpenReview] [CLVision Workshop 2023] [arXiv] [poster]
7. On the Convergence of IRLS and Its Variants in Outlier-Robust Estimation
[Highlight, 235/9155 \$\approx\$ 2.5% Acceptance Rate](#)
LP, Christian Kümmerle, and René Vidal
[CVPR 2023] [pdf] [talk video] [slides] [poster]
8. Global Linear and Local Superlinear Convergence of IRLS for Non-Smooth Robust Regression
LP, Christian Kümmerle, and René Vidal
[NeurIPS 2022] [OpenReview] [arXiv] [code] [slides] [poster]
9. Semidefinite Relaxations of Truncated Least-Squares in Robust Rotation Search: Tight or Not
[Oral Presentation, 158/5803 \$\approx\$ 2.7% Acceptance Rate](#)
LP, Mahyar Fazlyab, and René Vidal
[ECCV 2022] [arXiv] [slides] [talk video] [poster]
10. ARCS: Accurate Rotation and Correspondence Search
[Oral Presentation, 342/8161 \$\approx\$ 4.2% Acceptance Rate](#)
LP, Manolis C. Tsakiris, and René Vidal
[CVPR 2022] [arXiv] [code] [slides] [talk video] [poster]
11. Homomorphic Sensing: Sparsity and Noise
LP, Boshi Wang, and Manolis C. Tsakiris
[ICML 2021] [pdf] [talk video]
12. Homomorphic Sensing of Subspace Arrangements
[Applied and Computational Harmonic Analysis, 2021](#)
LP and Manolis C. Tsakiris
[arXiv]
13. Linear Regression Without Correspondences via Concave Minimization
IEEE Signal Processing Letters, 2020
LP and Manolis C. Tsakiris
[arXiv] [code]
14. Algebraically-Initialized Expectation Maximization for Header-Free Communication
LP, Xuming Song, Manolis C. Tsakiris, Hayoung Choi, Laurent Kneip, and Yuanming Shi
[ICASSP 2019] [pdf]

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
[IEEE Transactions on Pattern Analysis and Machine Intelligence, 2024](#)
[arXiv]
2. Unlabeled Principal Component Analysis and Matrix Completion
Yunzhen Yao, **LP**, and Manolis C. Tsakiris
[Journal of Machine Learning Research, 2024](#)
[JMLR Site] [arXiv]

3. Accelerating Globally Optimal Consensus Maximization in Geometric Vision
Xinyue Zhang, [LP](#), Wanting Xu, and Laurent Kneip
[IEEE Transactions on Pattern Analysis and Machine Intelligence](#), 2024
[\[arXiv\]](#)
4. Unlabeled Principal Component Analysis
Yunzhen Yao, [LP](#), and Manolis C. Tsakiris
[\[NeurIPS 2021\]](#) [\[OpenReview\]](#) [\[arXiv\]](#) [\[code\]](#)
5. Unsigned Matrix Completion
Yunzhen Yao, [LP](#), and Manolis C. Tsakiris
[\[ISIT 2021\]](#) [\[pdf\]](#)
6. 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
[\[arXiv\]](#) [\[code\]](#)
7. Homomorphic Sensing
Manolis C. Tsakiris and [LP](#)
[\[ICML 2019\]](#) [\[arXiv\]](#) [\[code\]](#)

HONORS AND AWARDS

Top Reviewer @NeurIPS 2024	2024
Top Reviewer @NeurIPS 2022	2022
Highlighted Reviewer @ICLR 2022	2022
The Dean's Fellowship @UPenn	August 2023
GRO Conference Grants @JHU	June 2022
MINDS PhD Fellowship @JHU	Spring 2022

TALKS

<i>Prehistory of Continual Learning and All Else That We Forget</i> @ESE PhD Colloquium, UPenn	November 2024
<i>Theory and Practice of Continual Learning</i> @Lifelong ML Group (Dr. Eaton), UPenn	October 2024
<i>Low-rank Matrix Recovery From Unlabeled Data With Missing Entries</i> @INFORMS Annual Meeting, Phoenix, Arizona [slides]	October 2023
<i>The Ideal Continual Learner: An Agent That Never Forgets</i> @AI TIME (Youth PhD Talk), Virtual [slides]	June 15, 2023
<i>Fantastic Iteratively Reweighted Algorithms and Where to Find Them</i> @SIAM Conference on Optimization, Seattle, Washington [slides]	June 1, 2023
<i>A Tale of Two Villains: Bandit, Procrustes, and Their Regrets</i> 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

Organizer:

Mini-Symposium @SIAM Conference on Optimization
with Christian Kümmeler and René Vidal

May 2023

“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 – 2025)

Learning on Graphs Conference (2022)

European Conference on Computer Vision (2022, 2024)

Computer Vision and Pattern Recognition (2022 – 2025)

International Conference on Learning Representations (2022 – 2025)

Neural Information Processing Systems (2021 – 2023)

International Conference on Machine Learning (2021 – 2024)

zbMATH Open (2021 - 2023)

IEEE Transactions on Pattern Analysis and Machine Intelligence

IEEE Transactions on Signal Processing

IEEE Robotics and Automation Letters

Transactions on Machine Learning Research

Journal of 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:

ESE 6450, Deep Generative Models

SI 232, Subspace Learning

CSCI-SHU 220, Algorithms

MATH 2111, Topological Data Analysis

SI 232, Subspace Learning

CS 133, Advanced C++ Programming

SI 192, Applied Algebraic Geometry

SI 112, Advanced Geometry

Fall 2024, UPenn

Fall 2020, ShanghaiTech

Spring 2020, NYU-Shanghai

Spring 2020, ShanghaiTech

Fall 2019, ShanghaiTech

Spring 2019, ShanghaiTech

Spring 2019, ShanghaiTech

Spring 2018, ShanghaiTech