

# LIANGZU PENG

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## EDUCATION

<i>University of Pennsylvania</i> , Philadelphia, USA Ph.D. in Electrical and System Engineering Advisor: Dr. René Vidal Thesis: TBD	August 2023 – Now
<i>Johns Hopkins University</i> , Baltimore, USA Ph.D. in Electrical and Computer Engineering Advisor: Dr. René Vidal (Transferred to UPenn)	August 2021 – May 2023
<i>ShanghaiTech University</i> , Shanghai, China M.S. in Computer Science Thesis: From Linear Regression Without Correspondences to Homomorphic Sensing	September 2017 – June 2021
<i>Zhejiang University</i> , Hangzhou, China B.Eng. in Measurement Control Technology and Instruments Thesis: Image Measurement Software for Visual Detection	September 2013 – June 2017

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## WORK EXPERIENCE

<i>Research Intern</i> , Alibaba DAMO Academy, Bellevue, WA, USA Mentor: Dr. Xinshang Wang, Dr. Wotao Yin	May 2023 – August 2023
<i>Research Assistant</i> , Johns Hopkins University, Baltimore, USA Advisor: Dr. René Vidal	August 2021 – May 2023
<i>Teaching Associate</i> , NYU Shanghai, China Instructor: Dr. Siyao Guo	September 2020 – May 2021
<i>Intern</i> , NYU Shanghai, China Instructor: Dr. Irith Hartman	February 2020 – June 2020

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## SELECTED PUBLICATION

### Conference Papers.

1. The Ideal Continual Learner: An Agent That Never Forgets  
[LP](#), Paris V. Giampouras, and René Vidal  
[ICML 2023] [CLVision Workshop 2023] [OpenReview] [arXiv] [bib]
2. On the Convergence of IRLS and Its Variants in Outlier-Robust Estimation  
[Highlight, 235/9155≈2.5% Acceptance Rate](#)  
[LP](#), Christian Kümmeler, and René Vidal  
[CVPR 2023] [pdf] [bib]
3. Global Linear and Local Superlinear Convergence of IRLS for Non-Smooth Robust Regression  
[LP](#), Christian Kümmeler, and René Vidal  
[NeurIPS 2022] [OpenReview] [arXiv] [code] [bib]

4. Semidefinite Relaxations of Truncated Least-Squares in Robust Rotation Search: Tight or Not  
[Oral Presentation, 158/5803 \$\approx\$ 2.7% Acceptance Rate](#)  
 $\underline{LP}$ , Mahyar Fazlyab, and René Vidal  
[\[ECCV 2022\]](#) [\[arXiv\]](#) [\[slides\]](#) [\[poster\]](#) [\[talk video\]](#) [\[bib\]](#)
5. ARCS: Accurate Rotation and Correspondence Search  
[Oral Presentation, 342/8161 \$\approx\$ 4.2% Acceptance Rate](#)  
 $\underline{LP}$ , Manolis C. Tsakiris, and René Vidal  
[\[CVPR 2022\]](#) [\[arXiv\]](#) [\[code\]](#) [\[slides\]](#) [\[talk video\]](#) [\[bib\]](#)
6. Unlabeled Principal Component Analysis  
 Yunzhen Yao,  $\underline{LP}$ , and Manolis C. Tsakiris  
[\[NeurIPS 2021\]](#) [\[OpenReview\]](#) [\[arXiv\]](#) [\[code\]](#) [\[bib\]](#)
7. Homomorphic Sensing: Sparsity and Noise  
 $\underline{LP}$ , Boshi Wang, and Manolis C. Tsakiris  
[\[ICML 2021\]](#) [\[pdf\]](#) [\[talk video\]](#) [\[bib\]](#)
8. Homomorphic Sensing  
 Manolis C. Tsakiris and  $\underline{LP}$   
[\[ICML 2019\]](#) [\[arXiv\]](#) [\[code\]](#) [\[bib\]](#)

#### *Journal Papers.*

1. Homomorphic Sensing of Subspace Arrangements  
 Applied and Computational Harmonic Analysis, 2021  
 $\underline{LP}$  and Manolis C. Tsakiris  
[\[arXiv\]](#) [\[bib\]](#)
2. Linear Regression Without Correspondences via Concave Minimization  
 IEEE Signal Processing Letters, 2020  
 $\underline{LP}$  and Manolis C. Tsakiris  
[\[arXiv\]](#) [\[code\]](#) [\[bib\]](#)
3. An Algebraic-Geometric Approach to Linear Regression Without Correspondences  
 IEEE Transactions on Information Theory, 2020  
 Manolis C. Tsakiris,  $\underline{LP}$ , Aldo Conca, Laurent Kneip, Yuanming Shi, and Hayoung Choi  
[\[arXiv\]](#) [\[code\]](#) [\[bib\]](#)

#### *Preprint.*

1. Accelerating Globally Optimal Consensus Maximization in Geometric Vision  
 Xinyue Zhang,  $\underline{LP}$ , Wanting Xu, and Laurent Kneip  
[\[arXiv\]](#)

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## HONORS AND AWARDS

### *Honors:*

Top Reviewer @NeurIPS 2022	2022
Highlighted Reviewer @ICLR 2022	2022

## Awards:

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

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## TALKS

<i>Fantastic Iteratively Reweighted Algorithms and Where to Find Them</i> @SIAM Conference on Optimization, Seattle, Washington [slides]	May 2023
<i>A Tale of Two Villains: Bandit, Procrustes, and Their Regrets</i> TheoriNet Retreat @Flatiron Institute, New York City [slides]	September 28, 2022
<i>Rotation Search: Optimization Theory and Algorithms</i> @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
<i>Semidefinite Relaxations in Robust Rotation Search: Tight or Not</i> @ECCV, Virtual [slides]	October 2022
@ICCOPT, Bethlehem, Pennsylvania [slides]	July 2022
<i>ARCS: Accurate Rotation and Correspondence Search</i> @CVPR, New Orleans, Louisiana [slides] [talk video]	June 2022

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## PROFESSIONAL SERVICE

### Organizer:

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

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## 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<sup>1</sup>

Spring 2018, ShanghaiTech

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<sup>1</sup>Lecture notes available: <http://www.liangzu.org/en/ag-notes.html>