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LIANGZU PENG

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EDUCATION

University of Pennsylvania, Philadelphia, USA — May 2026 (Expected)
Ph.D. in Electrical and Systems Engineering
Advisor: Dr. René Vidal

Johns Hopkins University, Baltimore, USA — 2023
Ph.D. in Electrical and Computer Engineering
(Transferred to UPenn)

ShanghaiTech University, Shanghai, China — 2021
M.S. in Computer Science
Thesis: From Linear Regression Without Correspondences to Homomorphic Sensing

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

WORK EXPERIENCE

Research Intern, Amazon AWS AI Lab, Bellevue, WA, USA — Summer 2025
with Dr. Wei Xia, Dr. Stefano Soatto

Research Intern, Alibaba DAMO Academy, Bellevue, WA, USA — Summer 2023
with Dr. Xinshang Wang, Dr. Wotao Yin

Teaching Associate, NYU Shanghai, China — February 2020 – May 2021

PUBLICATIONS

(Co-)First Author Papers.

1. Recovery Guarantees for Continual Learning of Dependent Tasks: Memory, Data-Dependent Regularization, and Data-Dependent Weights
   LP*, Uday Kiran Reddy Tadipatri*, Ziqing Xu, Eric Eaton, René Vidal [*: Equal Contribution]
   [In Submission to NeurIPS 2025]

2. Mathematics of Continual Learning
   LP and René Vidal
   [In Submission to Signal Processing Magazine]

3. LoRanPAC: Low-rank Random Features and Pre-trained Models for Bridging Theory and Practice in Continual Learning
   LP, Juan Elenter, Joshua Agterberg, Alejandro Ribeiro, René Vidal
   [ICLR 2025] [arXiv]

4. Block Acceleration Without Momentum: On Optimal Stepsizes of Block Gradient Descent for Least-Squares
   Spotlight, 335/9473≈3.5% Acceptance Rate
   LP and Wotao Yin
   [ICML 2024] [arXiv]

5. Scalable 3D Registration via Truncated Entry-wise Absolute Residuals
   Tianyu Huang*, ***LP****, René Vidal, and Yun-Hui Liu [*: Equal Contribution]
   [CVPR 2024] [arXiv]

6. HARD: Hyperplane ARrangement Descent
   Tianjiao Ding*, ***LP****, and René Vidal [*: Equal Contribution]
   [CPAL 2024, Oral]

7. Block Coordinate Descent on Smooth Manifolds: Convergence Theory and Twenty-One Examples
   LP and René Vidal
   [arXiv]

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

9. 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] [talk video] [slides] [poster]

10. 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]

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

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

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

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

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

16. 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. SECA: Semantically Equivalent & Coherent Attacks for Eliciting LLM Hallucinations
   Buyun Liang, ***LP***, Jinqi Luo, Darshan Thaker, Kwan Ho Ryan Chan, René Vidal
   In Submission to NeurIPS 2025

2. Accelerating Block Coordinate Descent for LLM Finetuning via Landscape Expansion
   Qijun Luo, Yifei Shen, ***LP***, Dongsheng Li, Xiao Li
   In Submission to NeurIPS 2025

3. 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]

4. Unlabeled Principal Component Analysis and Matrix Completion
   Yunzhen Yao, ***LP***, and Manolis C. Tsakiris
   Journal of Machine Learning Research, 2024
   [JMLR Site] [arXiv]

5. 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]

6. Unlabeled Principal Component Analysis
   Yunzhen Yao, ***LP***, and Manolis C. Tsakiris
   [NeurIPS 2021] [OpenReview] [arXiv] [code]

7. Unsigned Matrix Completion
   Yunzhen Yao, ***LP***, and Manolis C. Tsakiris
   [ISIT 2021] [pdf]

8. 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]

9. Homomorphic Sensing
   Manolis C. Tsakiris and ***LP***
   [ICML 2019] [arXiv] [code]

Honors and Awards

Best Reviewer @AISTATS 2025	2025
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

Mathematics of Continual Learning
Tutorial@CoLLAs, Philadelphia — August 2025

Prehistory of Continual Learning and All Else That We Forget
@ESE PhD Colloquium, UPenn — November 2024

Theory and Practice of Continual Learning
@Lifelong ML Group (Dr. Eaton), UPenn — October 2024

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

The Ideal Continual Learner: An Agent That Never Forgets
@Vidal's Lab Meeting — March 28, 2025
@AI TIME (Youth PhD Talk), Virtual — 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

Organizer:
Local Chair @Conference on Lifelong Learning Agents — August 2025
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)

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

International Conference on Artificial Intelligence and Statistics (2023 – 2025)

Learning on Graphs Conference (2022)

International Conference on Computer Vision (2023, 2025)

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 – 2025)

International Conference on Machine Learning (2021 – 2025)

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	Fall 2025, UPenn
ESE 6450, Deep Generative Models	Fall 2024, UPenn
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	Spring 2018, ShanghaiTech