Fushuai Jiang

Contact Information

Department of Mathematics
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Research

Real Analysis, Functional Analysis, Optimal Transport, Machine Learning

Education

University of California, Davis

Ph.D. in Mathematics, June 2022

Dissertation Topic: Nonnegative Smooth Interpolation
Advisor: Kevin Luli

M.S. in Mathematics, June 2018

University of California, Los Angeles

B.S. in Mathematics, June 2017

Departmental Highest Honors, Cum Laude Latin Honors
Mentors: John Garnett, Peter Petersen

Academic Employment

2023-2025 **University of Maryland, Novikov Postdoctoral Fellow**
Mentors: Radu Balan & Wojciech Czaja

2022 Fall **ICERM, Fall Semester Postdoc**
Harmonic Analysis and Convexity.

Honors and Awards

2021-2022 Yueh-Jing Lin Fund.
Awarded to high-achieving mathematics students.

2021-2022 Graduate Research Award.
Annual internal fellowship awarded to promising graduate researchers.

2020 Alice Leung Scholarship.
Awarded to graduate student with exceptional promise in mathematical research.

2020-2021 Summer Graduate Student Researcher (GSR) Award.
In recognition of exceptional achievements in our graduate education community.

Journal Publications

15. F. Jiang
Roots, trace, and extendability of flat nonnegative functions
International Mathematics Research Notices, online, 2024

14. F. Jiang, C. Liang, Y. Liang, and G.K. Luli
Univariate Range-Restricted C^2 Interpolation Algorithms,
Journal of Computational and Applied Mathematics, 425:115040, 2023.

13. C. Fefferman, F. Jiang, G.K. Luli
C^2 interpolation with range restriction,
Revista Matemática Iberoamericana, 39(2):649–710, 2023

12. F. Jiang, G.K. Luli, K. O'Neill
Smooth selection for infinite sets,
Advances in Mathematics, 407:108566, 2022.

11. F. Jiang, G.K. Luli, K. O'Neill,
On the shape fields finiteness principle
International Mathematics Research Notices, 23:18895–18918, 2022.

10. F. Jiang, G.K. Luli,
Algorithms for nonnegative $C^2(\mathbb{R}^2)$ interpolation.
Advances in Mathematics, 385:107756, 2021.

9. F. Jiang, G.K. Luli,
$C^2(\mathbb{R}^2)$ nonnegative extension by bounded-depth operators.
Advances in Mathematics, 375:107391, 2020.

8. F. Jiang, G.K. Luli,
Nonnegative $C^2(\mathbb{R}^2)$ interpolation.
Advances in Mathematics, 375:107364, 2020.

7. K. Xu, F. Jiang, W. Zhang, and Y. Hao
Micromachined integrated self-adaptive nonlinear stops for mechanical shock protection of MEMS.
Journal of Micromechanics and Microengineering, 28:064006, 2018.

Preprints & Conference Proc.

6. J. Chhoa, M. Ivanitskiy, F. Jiang, S. Li, D. McBride, T. Needham, and K. O'Hare
Metric properties of partial and robust Gromov-Wasserstein distances
arXiv:2411.02198.

5. R. Balan, F. Jiang
Factorization of positive-semidefinite operators with absolutely summable entries
arXiv:2409.20372.

4. F. Jiang
Extension of flat nonnegative smooth functions by operators
In Preparation.

3. F. Jiang
Nonnegative Whitney extension problem for $C^1(\mathbb{R}^n)$.
arXiv:1912.06327.

2. K. Xu, N. Zhu, F. Jiang, W. Zhang, and Y. Hao
A Transfer Function Approach to Shock Duration Compensation for Laboratory Evaluation of Ultra-High-G Vacuum-Packaged MEMS Accelerometers.
IEEE 32nd International Conference on Micro Electro Mechanical Systems (MEMS), 676–679, 2019.

1. K. Xu, N. Zhu, F. Jiang, W. Zhang, and Y. Hao
Micromachined integrated shock protection via a self-adaptive nonlinear system.
19th International Conference on Solid-State Sensors, Actuators and Microsystems (TRANSDUCERS), 524–527, 2017.

Talks

01/09/2025	*Efficient algorithm for non-negative smooth interpolation* AMS Special Session on Adversarial, Interpretable, and Explainable AI
11/21/2024	*Finding a smooth solution to an underdetermined system* One World Mathematics of Information, Data, and Signals (1W-MINDS) Seminar
10/19/2024	*ℓ_1-squared summable series and a problem by Feichtinger* Frame Theory Days 2024
10/11/2024	*How to find a smooth solution to an underdetermined system?* Johns Hopkins postdoc seminar
07/06/2024	*Smooth selection of convex sets* Loo-Keng Hua Lecture, Chinese Academy of Sciences
06/24/2024	*Partial optimal transport* MRC 2024: Mathematics of Adversarial, Interpretable, and Explainable AI
03/24/2024	*Primal and dual optimization problems related to matrix factorizations* AMS Special Session on Bases and Frames in Hilbert Spaces, III
08/14/2023	*Positivity and the Whitney Extension Problem* The 15th Whitney Problems Workshop
06/18/2023	*Recent development in Whitney extension problems with constraint* Shenzhen University
03/10/2023	*Quasi-optimal C^2 interpolation with range restriction* CUNY GC Harmonic Analysis and PDE Seminar
10/14/2022	*Smooth Selection of Convex Sets* Harmonic Analysis and Convexity Program, ICERM
10/06/2022	*Quasi-optimal C^2 interpolation with range restriction* Fall Fourier Talks, University of Maryland at College Park
07/08/2021	*Recent Results on Whitney extensions with constraints* The 14th Whitney Problems Workshop
05/15/2020	*Efficient algorithm for nonnegative C^2 interpolation* UC Davis PDE and Applied Math Seminar
02/23/2020	*A gentle introduction to pseudodifferential calculus* UC Davis Student-run Analysis & PDE Seminar
10/15/2019	*Fitting smooth functions to data - Whitney's problems and beyond* UC Davis Student-run Research Seminar
05/11/2019	*Whitney extension problem and interpolation of data* *Bay Graduate Math Conference*
02/08/2019	*Interpolation of data by nonnegative C^2 functions* UC Davis PDE and Applied Math Seminar

Teaching

Fall	2025	Data Visualization and Presentation (`R`)
Spring	2025	Applied Probability and Statistics (senior level, `R`)
Fall	2024	Data Visualization and Presentation (`R`)
Spring	2024	Data Science and Machine Learning (`Python`)
Spring	2024	Applied Probability and Statistics (senior-level, `R`)
Fall	2023	Calculus III
Spring	2023	Linear Algebra and Applications (`MATLAB`)
Summer	2022	Real Analysis
Fall	2020	Teaching Assistant, Real Analysis
Spring	2020	Teaching Assistant, Graduate Analysis
Summer	2019	Instructor, Calculus II
Spring	2019	Teaching Assistant, Graduate Analysis
Various	2017-2021	Teaching Assistant, Calculus I-III

Service

2024	*Assistant organizer*, Mathematics Research Communities, AMS
2021-now	*Mentor*, Undergraduate research
2023	*Organizer*, The 15th Whitney Problems workshop
2021	*Organizer*, The 14th Whitney Problems workshop
2021	*Organizer*, 2021 Davis Math Conference
2021	*Organizer*, Student Run Analysis&PDE Seminar
2021-2022	*Mentor*, Direct Reading Project
2018-2020	*Tutor*, STEM Café at Women's Resources and Research Center
2019-2020	*Vice President*, Galois group (graduate student group)
2018-2020	*Representative*, Graduate Student Association

Programming Skills

`R`	(dplyr, ggplot, Shiny)
`Python`	(NumPy, SciPy, scikit-learn, pandas)
`MATLAB`	