

Contact Information

Longxiu Huang
Department of Mathematics
University of California, Los Angeles
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Research Interest

Modern harmonic analysis, image/data Processing, geometric analysis, numerical linear algebra, high performance computing, dynamical sampling.

Education

Ph.D. Mathematics **Aug. 2014 – May. 2019**
Mathematics Department, Vanderbilt University
Nashville, TN 37240, U.S.A.

- Academic advisor: Akram Aldroubi
- Dissertation: Dynamical Sampling and its Applications

M.S. Mathematics **Sep. 2012 – Jun. 2014**
School of Mathematical Sciences, Fudan University
Yangpu District, Shanghai 200433, P. R. China

B.S. Mathematics **Sep. 2009 – Jun. 2012**
School of Mathematics and Computational Science, Sun Yat-sen University
Guangzhou, Guangdong 510275, P. R. China

- Bachelor thesis advisor: Yuesheng Xu & Weicai Ye
- Bachelor thesis: GPU-Based Parallel Implementation of the QR Decomposition Algorithm

B.S. Software Engineering **Sep. 2008 – Jun. 2009**
School of Software, Sun Yat-sen University
Guangzhou, Guangdong 510275, P. R. China

Employment

2019-Present: University of California, Assistant Adjunct Professor

- Supervisor: Deanna Needell

Honors and Awards

[1] Bjarni Jónsson Prize for Research (Vanderbilt University) **2019**
[2] AWM travel award for AWM Research Symposium 2019 (\$625) **April**

Publication**Journal Articles and Preprints**

- [1] L. Huang, B. Sun, T. Wang, "A Six-Neighbor Theorem for Planar Normal Tilings," In preparation.
- [2] A. Aldroubi, K. Gröchenig, L. Huang, P. Jaming, I. Krishtal, J. Romero, "Sampling the Flow of a Bandlimited Function," Submitted.
- [3] L. Huang, D. Needell, "HOSVD-based Algorithm for Weighted Tensor Completion," Submitted.

- [4] K. Hamm, L. Huang, "Perturbations of CUR Decompositions," Submitted.
- [5] K. Hamm, L. Huang, "Stability of Sampling for CUR Decompositions," *Foundations of Data Science*, In Press.
- [6] K. Hamm, L. Huang, "Perspectives on CUR Decompositions," *Applied and Computational Harmonic Analysis*, In Press.
- [7] A. Aldroubi, L. Huang, and A. Petrosyan, "Frames induced by the action of continuous powers of an operator," *Journal of Mathematical Analysis and Applications*, Vol.478, No.2 (2019), pp.1059-1084.
- [8] A. Aldroubi, L. Huang, I. Krishtal, R. Lederman, A. Ledeczi, and P. Volgyesi, "Dynamical sampling with additive random noise," *Sampling Theory in Signal and Image Processing*, Vol.17, No.2 (2018), pp.153-182.
- [9] L. Huang and T. Wang, "On the number of neighbors in normal tiling," *SIAM Journal of Discrete Mathematics*, Vol. 31, Issue 1 (2017), pp. 240-253. **DOI:10.1137/15M104712X**

Conference Publications

- [1] Z. Chao, L. Huang, and D. Needell, "Tensor Completion through Total Variation with Initialization from Weighted HOSVD," *Proc. Information Theory and Applications (ITA 2020)*, San Diego, CA, February.
- [2] A. Aldroubi, L. Huang, K. Kornelson, and I. Krishtal, "Dynamical Sampling with a Burst-like Forcing Term," *13th International Conference on Sampling Theory and Applications (SampTA 2019)*, Bordeaux, France.
- [3] K. Hamm and L. Huang, "On Column-Row Matrix Approximations," *13th International Conference on Sampling Theory and Applications (SampTA 2019)*, Bordeaux, France.
- [4] A. Aldroubi, L. Huang, I. Krishtal, and R. Lederman, "Dynamical sampling with random noise," *2017 International Conference on Sampling Theory and Applications (SampTA)*, Tallin, Estonia, 2017, pp.409-412. **DOI:10.1109/SAMPTA.2017.8024372**

Poster

"Numerical testing for Dynamical Sampling," *Workshop on Recent Developments on Mathematical/Statistical approaches in DATA Science (MSDAS)*, June, 2019

"Numerical testing for Dynamical Sampling," *February Fourier Talks 2018*, February, 2018

"Expected Precision and Bias of T_1 and T_2 Relaxation Rates Derived from Magnetic Resonance Fingerprinting," *The Conference of the Frontiers of Biomedical Imaging Science VI*, May, 2017

Invited Research Visit

- [1] Northern Illinois University, Host: Professor Ilya Krishtal, September 2019

Talk

- [1] "Tensor Completion through Total Variation with Initialization from Weighted HOSVD," *Information Theory and Applications Workshop*, San Diego, CA, February 3, 2020

- [2] “CUR Decompositions and Perturbations,” Joint Mathematics Meetings, AMS Special Session on Group Actions in Harmonic Analysis, Denver, CO, January 15, 2020.
- [3] “CUR Decompositions and Perturbations,” Approximation Theory 16, Vanderbilt in Nashville, Tennessee, May 20, 2019
- [4] “Dynamical Sampling,” the AWM research symposium 2019, Rice University in Houston, Texas, April 6, 2019
- [5] “Dynamical Sampling with additive Random noise,” Second International Conference on Mathematics of Data Science, Old Dominion University in Norfolk, Virginia, Nov 4, 2018
- [6] “Dynamical Sampling in Continuous time,” Special Session on Applied Harmonic Analysis: Frame Theory and Applications, Fall Western Sectional Meeting, San Francisco, CA, October 27, 2018
- [7] “Dynamical Sampling,” Seminar talk, Georgia Institute of Technology, October 17, 2018
- [8] “On noise and unknown evolution operators in dynamical sampling,” Oak Ridge National Laboratory, July 19, 2018
- [9] “Frames Induced by the Continuous Actions of an Operator,” *7th International Conference on Computational Harmonic Analysis*, Nashville, May 15, 2018
- [10] “Frames Induced by the Action of Continuous Powers of an Operator”, *The Conference of AMS Nashville*, April 15, 2018
- [11] “Dynamical Sampling in Continuous time,” *Special Session on Applied Harmonic Analysis: Frames, Samplings, and Applications, AMS Fall South-eastern Sectional Meeting*, Orlando, FL, September 23, 2017
- [12] “Dynamical Sampling in random noise,” *12th International Conference on Sampling Theory and Applications (SampTA 2017)*, Tallinn, Estonia, July 6, 2017

Additional Training

- [1] Scientific Machine Learning, ICERM Topical Workshop, Providence, RI, **January 28–30, 2019**
- [2] Math + X Symposium on Inverse Problems and Deep Learning in Space Exploration, Rice University, **January 23–25, 2019**
- [3] Data Sparse Approximations and Algorithms of Gene Golub SIAM Summer School, Akademie Berlin-Schmöckwitz, Germany, **May 29–June 9, 2017**
- [4] The Eigenvalues Problems of Scientific Computational Summer School, Institute of Software, Chinese Academy of Sciences, Beijing, China, **July 22–27, 2013.**
- [5] “Personal investment based on neural network algorithm”, Undergraduate Research Project of Guangdong Province Sun Yat-sen University, Supervised by Professor Peixing Li, **Sep 2010–Mar 2012.**

Teaching and grading

- Instructor, Linear Algebra and its Applications 33A (78 students), 2020 Winter
- Instructor, Linear Algebra 115A, 2019 Fall
- Instructor, Linear Algebra and its Applications 33A (160 students), 2019 Fall

- Teaching assistant, Accelerated Single-Variable Calculus 1301, 2019 Spring.
- Teaching assistant, Accelerated Single-Variable Calculus 1300, 2018 Fall.
- Teaching assistant, Multivariable Calculus and Linear Algebra, 2018 Spring.
- Teaching assistant, Accelerated Single-Variable Calculus 1300, 2017 Fall.
- Teaching assistant, Differential Equations with Linear Algebra, 2017 Spring.
- Teaching assistant, Accelerated Single-Variable Calculus 1300, 2016 Fall.
- Teaching assistant, Accelerated Single-Variable Calculus 1301, 2016 Spring.
- Grader, Introduction to Numerical Mathematics, 2015 Fall.

**Programming
Skills**

Matlab, Julia, Cuda C, C, C++, Python

**Language
Skills**

English, Chinese