

ARMENAK PETROSYAN, PH.D.

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PROFESSIONAL EXPERIENCE

- **Hale Visiting Assistant Professor** Aug 2020 - Present
School of Mathematics
Georgia Institute of Technology, Atlanta, GA, USA
Mentor: Prof. Christopher Heil
- **Postdoctoral Research Associate** Aug 2017 - Jul 2020
Computer Science and Mathematics Division
Oak Ridge National Laboratory, TN, USA
Mentor: Prof. Clayton Webster

FORMAL EDUCATION

- **Online Masters in Data Analytics** Aug 2022 - Present
Georgia Institute of Technology, Atlanta, GA, USA
- **PhD in Mathematics** Aug 2012 - Aug 2017
Vanderbilt University, Nashville, TN, USA
PhD advisor: Prof. Akram Aldroubi
- **Master's degree in Mathematics** Sep 2010 - May 2012
Yerevan State University, Armenia
Master's advisor: Prof. Artur Sahakian
- **Bachelor's degree in Mathematics** Sep 2006 - May 2010
Yerevan State University, Armenia

PUBLICATIONS

- A. Petrosyan, K. Pieper, and H. Tran
Non-convex rank-aware regularization for joint sparse recovery.
In preperation
- K. Pieper and A. Petrosyan
Nonconvex regularization for sparse neural networks.
Applied and Computational Harmonic Analysis, 61, pp. 25-56, 2022
- A. Aldroubi, C. Cabrelli, U. Molter, and A. Petrosyan
Local-to-global frames and applications to dynamical sampling problem.
Excursions in Harmonic Analysis, Volume 6, pp. 211-220. Birkhäuser, Cham, 2021
- K. Hamm, B. Hayes, and A. Petrosyan
An operator theoretic approach to the convergence of rearranged Fourier series.
Journal d'Analyse Mathématique, 143(2), pp. 503-534, 2021
- A. Dereventsov, A. Petrosyan, and C. Webster
Neural network integral representations with the ReLU activation function.
Mathematical and Scientific Machine Learning, pp. 128-143. PMLR, 2020.

- K. Hamm, B. Hayes, and A. Petrosyan
Rearranged Fourier Series and Generalizations to Non-Commutative Groups.
13th International Conference on Sampling Theory and Applications (SampTA), pp. 1-4. IEEE, 2019.
- A. Aldroubi, L. Huang, A. Petrosyan
Frames induced by the action of continuous powers of an operator.
Journal of Mathematical Analysis and Applications, 478(2), 1059-1084, 2019
- A. Petrosyan, H. Tran, and C. Webster
Reconstruction of jointly sparse vectors via manifold optimization.
Applied Numerical Mathematics, 144, p. 140-150, 2019
- A. Aldroubi, C. Cabrelli, A. F. Cakmak, U. Molter, and A. Petrosyan
Iterative actions of normal operators.
Journal of Functional Analysis, 272(3), p. 1121-1146, 2017
- A. Aldroubi and A. Petrosyan
Dynamical sampling and systems from iterative actions of operators
Frames and Other Bases in Abstract and Function Spaces, pp. 15-26. Birkhäuser, Cham, 2017.
- R. Aceska, A. Aldroubi, J. Davis, and A. Petrosyan
Dynamical sampling in shift-invariant spaces
AMS Contemporary Mathematics (CONM) book series, p. 139-148, 2013

GRANTS AND AWARDS

- Georgia Tech-ORNL seed grant (\$4000).
- Member of the Grand Prize winner team for ORNL SNS Neutral Scattering Ugly Data challenge competition. Details can be found at <https://datadays.pages.ornl.gov/SNS/>.

CONFERENCE AND SESSION ORGANIZATION

- **Focus program on Data Science, Approximation Theory, and Harmonic Analysis**
co-organized with Akram Aldroubi, Keaton Hamm and Javad Mashreghi, Fields Institute, 2022
- **Fast Algorithms, Sparsity and Approximation, Part I-III**
16th International Conferences on Approximation Theory
co-organized with with Bosu Choi and Mark Iwen, University of Tennessee at Knoxville, September 21-22, 2019
- **Reduced and Parametric Methods for Function Approximations**
16th International Conferences on Approximation Theory-co-organized with with Anton Dereventsov, Vanderbilt University, TN, May 19, 2019

RECENT PRESENTATIONS

- CodEx Seminar
Online, September 7, 2021
Title: “Integral neural networks with weight penalization.”

- Mathematical and Scientific Machine Learning (MSML 2020),
Princeton University (held online), July 21, 2020.
Title: “Integral neural networks with the ReLU activation function.”
- Applied Mathematics Seminar,
University of California, Los Angeles, March 4, 2020.
Title: “Neural network integral representations and sparse networks.”
- Conference on Computational Mathematics and Applications,
University of Nevada, Las Vegas, October 25 - 27, 2019.
Title: “Neural network integral representations.”
- SIAM SEAS 2019 Annual Meeting,
University of Tennessee, Knoxville, September 20-22, 2019.
Title: “Neural network integral representations on the sphere for the ReLU activation function.”
- 13th SampTA (Sampling Theory and Applications),
University of Bordeaux, France, July 8-12, 2019.
Title: “Rearranged Fourier Series and Generalizations to Non-commutative Groups.”
- Signal Processing with Adaptive Sparse Structured Representations (SPARS) workshop,
ENSEEIH, Toulouse, France, July 1-4, 2019.
Title: “Joint sparse recovery through manifold optimization.”
- 16th International Conferences on Approximation Theory,
Vanderbilt University, Nashville, TN, May 19-22, 2019.
Title: “Rearranged Fourier Series and Generalizations to Non-commutative Groups.”
- AMS Fall Western Sectional Meeting,
San Francisco State University, San Francisco, CA, October 27-28, 2018.
Title: “Joint sparse recovery through manifold optimization.”
- 7th International Conference on Computational Harmonic Analysis and 60th Birthday Workshop for Akram Aldroubi,
Nashville TN, May 14-19, 2018.
Title: “Joint sparse recovery through manifold optimization.”
- BIRS Numerical Analysis and Approximation Theory meets Data Science,
Banff, Canada, April 22-28, 2018.
Title: “Joint sparse recovery through manifold optimization.”

TEACHING (GEORGIA TECH)

- **Topics in Linear Algebra**
Fall 2022.
- **Statistical Theory**
Spring 2022.
- **Discrete Mathematics and Graph Theory**
Fall 2021.
- **Probability and Statistics**
Fall 2020, Spring 2021, Summer 2021.