Nikolaos (Nikos) Kargas

Ph.D student, Department of ECE, University of Minnesota, USA

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Research Interests

› Areas: Machine Learning, Statistics, Optimization.

› Topics: Tensor-based Statistical Learning, Density Estimation, Nonlinear System Identification.

Education

2015–2020 | **Ph.D. in Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN, USA.**

▷ Thesis: "Tensor Modeling of High-Dimensional Distributions and Nonlinear Functions."

▷ Advisor: Professor Nicholas D. Sidiropoulos.

▷ Thesis Committee: G. B. Giannakis, G. Karypis, M. Hong.

▷ Selected Coursework: Nonlinear Optimization, Introduction to Data Mining, Tensor Decomposition for Signal Processing and Machine Learning, Advanced Algorithms and Data Structures, Probability and Random Processes, Computational Aspects of Matrix Theory.

2015 | **Master of Science, Technical University of Crete, Chania, Greece.**

▷ Thesis: "SDR Readers for Gen2 RFID and Backscatter Sensor Networks."

▷ Advisor: Professor Aggelos Bletsas.

▷ Selected Coursework: Machine Learning, Probabilistic Graphical Models, Detection and Estimation Theory.

2013 | **Diploma of Engineering, Technical University of Crete, Chania, Greece.**

▷ Thesis: "Robust Localization for the RoboCup Standard Platform League."

▷ Advisor: Professor Michail G. Lagoudakis.

Publications

Conferences

[**C8**] **N. Kargas** and N. D. Sidiropoulos, *"Nonlinear System Identification via Tensor Completion"*, AAAI 2020 (to appear), New York City, NY, USA, Feb. 2020.

[**C7**] I. Shahana, X. Fu, **N. Kargas** and K. Huang, *"Crowdsourcing via Pairwise Co-occurrences: Identifiability and Algorithms"*, in Proc. NeurIPS, Vancouver, Canada, Dec. 2019.

[**C6**] M. Amiridi, **N. Kargas** and N. D. Sidiropoulos, *"Statistical Learning Using Hierarchical Modeling of Probability Tensors"*, in Proc. IEEE DSW, Minneapolis, MN, USA, June 2019. Best student paper award. 🏆

[**C5**] **N. Kargas** and N. D. Sidiropoulos, *"Learning Mixtures of Smooth Product Distributions: Identifiability and Algorithm"*, in Proc. AISTATS, Naha, Japan, Apr. 2019.

[**C4**] B. Yaman, S. Weingartner, **N. Kargas**, N. D. Sidiropoulos and Mehmet Akcakaya, *"Locally Low-Rank Tensor Regularization for High-Resolution Quantitative Dynamic MRI"*, in Proc. IEEE CAMSAP, Curacao, Dutch Antilles, Dec. 2017.

[**C3**] **N. Kargas**, S. Weingartner, N. D. Sidiropoulos and M. Akcakaya, *"Low-Rank Tensor Regularization for Improved Dynamic Quantitative Magnetic Resonance Imaging"*, SPARS, Lisbon, Portugal, June 2017.

[**C2**] **N. Kargas** and N. D. Sidiropoulos, *"Completing a Joint PMF from Projections: A Low-rank Coupled Tensor Factorization Approach"*, in Proc. IEEE ITA, San Diego, CA, USA, Feb. 2017.

[**C1**] P. Alevizos, N. Fasarakis, K. Tountas, N. Agadakos, **N. Kargas** and A. Bletsas, *"Channel Coding for Increased Range Bistatic Backscatter Radio: Experimental Results"*, in Proc. IEEE RFID-TA, Tampere, Finland, Sept. 2014.

Journals

[J3] B. Yaman, S. Weingartner, **N. Kargas**, N. D. Sidiropoulos and M. Akcakaya, *"Low-Rank Tensor Models for Improved Multi-Dimensional MRI: Application to Dynamic Cardiac T_1 Mapping"*, IEEE Transactions on Computational Imaging, 2019 (to appear).

[J2] **N. Kargas**, N.D. Sidiropoulos and X. Fu, *"Tensors, Learning, and 'Kolmogorov Extension' for Finite-Alphabet Random Vectors"*, IEEE Transactions on Signal Processing, vol. 66, no. 18, pp. 4854–4868, 2018.

[J1] **N. Kargas**, F. Mavromatis and A. Bletsas, *"Fully-Coherent Reader with Commodity SDR for Gen2 FM0 and Computational RFID"*, IEEE Wireless Communications Letters, vol. 4, no. 6, pp. 617–620, 2015.

Research Experience

2015–2020	**Research Assistant**, University of Minnesota, Minneapolis, MN, USA. Main focus is on tensor methods for machine learning with applications in non-parametric density estimation and nonlinear function approximation.
2013-2015	**Research Assistant**, Technical University of Crete, Chania, Greece. Backscatter Networks for Large-Scale Environmental Sensing. Development of SDR-based readers for RFID and backscatter sensor networks.

Technical Skills

Programming	C/C++, Python, JAVA, MapReduce (Hadoop).
Packages/Libraries	scikit-learn, CVX/CVXOPT, PyTorch.
Environments and Tools	MATLAB, Git.

Service

Teaching Assistance

- Tensors for Data Science (Spring 2019)
- Optimization for Machine Learning (Fall 2018)
- Analysis & Design (Synthesis) of Telecom Modules (Fall 2014)
- Telecommunication Systems II (Spring 2013)

Mentoring

- Magda Amiridi, junior Ph.D. student, published in [C6].

Reviewing Activities

- Conferences: ICML 2019, MLSP 2019, GLOBALSIP 2019, ICASSP 2019, EURFID 2015.
- Journals: IEEE Transactions on Signal Processing, IEEE Transactions on Medical Imaging, IEEE Transactions on Wireless Communications, IEEE Wireless Communications Letters.

Research Competitions

Autonomous robot soccer competition (robocup.org).

RoboCup 2013	Eindhoven, Netherlands, 24–30 June 2013.
RoboCup Iran Open 2013	Tehran, Iran, 3–7 April 2013.
RoboCup Autcup 2012	Tehran, Iran, 20–25 October 2012.

References

Available upon request