

Dionysios S. Kalogierias

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Research Interests

Data-Driven Methods for Machine and Reinforcement Learning

Mathematical Programming

Risk-Averse Optimization

Sequential Decision and Dynamic Programming

Statistical Inference

Stochastic Dynamical Systems

Applications: Resource Allocation, Network Dynamics & Control, Autonomous and Multi-Agent Systems
Supply Chain Management, Telecommunications, Security and Privacy.

Education

PhD (GPA: 4/4 | Double Distinction) 2017

Department of Electrical & Computer Engineering (ECE)

Rutgers, The State University of New Jersey, USA | Advisor: Prof. Athina P. Petropulu

Distinction #1: 2016/2017 ECE Graduate Program Academic Achievement Award

Distinction #2: 2017 School of Engineering (SOE) Outstanding Graduate Student Award

MS (GPA: 9.6/10) 2012

Interdepartmental Graduate Program "SPCOMS"

University of Patras, Greece | Advisor: Prof. Emmanouil Z. Psarakis

MEng (GPA: 7.92/10) 2010

Department of Computer Engineering and Informatics (CEID)

University of Patras, Greece | Advisor: Prof. Emmanouil Z. Psarakis

Work Experience

Postdoctoral Research Associate, CASTLE Labs June 2017 - Present

Department of Operations Research & Financial Engineering (ORFE), Princeton University

Supervisor: Prof. Warren B. Powell

Research Associate, Communications & Signal Processing Laboratory (CSPL) Mar 2017 - May 2017

Department of ECE, Rutgers, The State University of New Jersey

Supervisor: Prof. Athina P. Petropulu

PhD Research Assistant, Communications & Signal Processing Laboratory (CSPL) Sep 2012 - Feb 2017

Department of ECE, Rutgers, The State University of New Jersey

MS Research Assistant, Signal Processing & Communications Laboratory Sep 2010 - Aug 2012

CEID, University of Patras

Honors & Awards

External.....

Nominee for ICASSP Best Student Paper Award (16 nominees in total) 2016

ICASSP Best Student Paper of the Special Sessions 2016

ICASSP NSF (National Science Foundation) Travel Grant Award (\$ 500)	2016
Gerondelis Foundation Fellowship, Gerondelis Foundation, Inc. (\$ 5,000)	2014 - 2015
ICASSP NSF (National Science Foundation) Travel Grant Award (\$ 1,100)	2014
SPAWC Travel Grant Award (\$ 1,500)	2013
Rutgers	
SOE Outstanding Graduate Student Award (\$ 500)	2017
ECE Graduate Program Academic Achievement Award	2017
Graduate School (New Brunswick) Conference Travel Award (\$ 300)	2016
School of Engineering (SOE) TA/GA Professional Development Fund Award (\$ 2,100)	2015
ECE Student Development Award	2015
ECE PhD Student Research Excellence Award	2013
Leeds Fellowship (\$ 20,000)	2012 - 2013
ECE Graduate & Teaching Assistantship	2012 - 2017

Journal Papers Under Review/Preparation

- ▶ D. S. Kalogierias and W. B. Powell, "Recursive Optimization of Mean-Semideviation Risk Measures with Variable Assessment," *SIAM Journal on Optimization*, to be submitted in 2018. Extended preprint available on *Arxiv*.
- ▶ K. E. Nikolakakis, D. S. Kalogierias, and A. D. Sarwate, "Predictive Learning on Sign-Valued Hidden Markov Trees," *Journal of Machine Learning Research (JMLR)*, to be submitted in 2018.

Journal Publications

- ▶ D. S. Kalogierias and A. P. Petropulu, "Spatially Controlled Relay Beamforming," *IEEE Transactions on Signal Processing*, to appear in 2018 (accepted).
- ▶ D. S. Kalogierias and A. P. Petropulu, "Uniform ϵ -Stability of Distributed Nonlinear Filtering over DNAs: Gaussian-Finite HMMs," *IEEE Transactions on Signal & Information Processing over Networks (Special Issue on Inference & Learning over Networks)*, vol. 2, no. 4, pp. 461 - 476, December 2016.
- ▶ D. S. Kalogierias and A. P. Petropulu, "Grid-Based Filtering of Markov Processes Revisited: Recursive Estimation & Asymptotic Optimality," *IEEE Transactions on Signal Processing*, vol. 64, no. 16, pp. 4244 - 4259, July 2016.
- ▶ D. S. Kalogierias and A. P. Petropulu, "Asymptotically Optimal Discrete Time Nonlinear Filters From Stochastically Convergent State Process Approximations," *IEEE Transactions on Signal Processing*, vol. 63, no. 13, pp. 3522 - 3536, July 2015.
- ▶ D. S. Kalogierias and A. P. Petropulu, "Matrix Completion in Colocated MIMO Radar: Recoverability, Bounds & Theoretical Guarantees," *IEEE Transactions on Signal Processing*, vol. 62, no. 2, pp. 309 - 321, January 2014.

Conference Publications/Workshops/Posters

- ▶ K. E. Nikolakakis, D. S. Kalogierias, and A. D. Sarwate, "Learning Tree Structures from Noisy Data," 22nd International Conference on Artificial Intelligence and Statistics (AISTATS 2019), Naha, Okinawa, Japan, April 2019 (submitted).
- ▶ K. E. Nikolakakis, D. S. Kalogierias, and A. D. Sarwate, "Learning Tree Structures from Noisy Data," Rutgers ECE Research Day 2018, Department of Electrical & Computer Engineering, Rutgers, The State University of New Jersey, Piscataway, NJ, USA, November 2018.
- ▶ A. Dimas, D. S. Kalogierias, C. Koumpouzi, and A. P. Petropulu, "Parameter Estimation for Hierarchical Channel Profiling," 5th IEEE Global Conference on Signal and Information Processing (GlobalSIP 2017), Montreal, Canada, November 2017.
- ▶ D. S. Kalogierias and A. P. Petropulu, "Spatially Controlled Relay Beamforming," 2017 Information Theory & Applications Workshop (ITA 2017), San Diego, CA, USA, February 2017 (*Graduation Day (GD) presentation*).
- ▶ D. S. Kalogierias and A. P. Petropulu, "Enhancing QoS in Spatially Controlled Beamforming Networks via Distributed Stochastic Programming," 42nd IEEE International Conference on Acoustics, Speech and Signal Processing

(ICASSP 2017), New Orleans, LA, USA, March 2017.

- ▶ D. S. Kalogerias and A. P. Petropulu, “*Mobile Beamforming & Spatially Controlled Relay Communications*,” 41st IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP 2014), Shanghai, China, March 2016 (*invited*, selected as the “**Best Paper of the Special Sessions**”).
- ▶ D. S. Kalogerias and A. P. Petropulu, “*Distributed Nonlinear Filtering of Partially Observed Markov Chains over WSNs: Truncating the ADMM*,” 49th Asilomar Conference on Signals, Systems & Computers (Asilomar 2015), Asilomar Hotel & Conference Grounds, Pacific Grove, CA, USA, November 2015 (*invited*).
- ▶ D. S. Kalogerias and A. P. Petropulu, “*On Pathwise Convergence of Particle & Grid Based Nonlinear Filters: Feller vs Conditional Regularity*,” 53rd Annual Allerton Conference on Communication, Control, and Computing (Allerton 2015), Monticello, Illinois, September 29 - October 2, 2015.
- ▶ D. S. Kalogerias and A. P. Petropulu, “*Nonlinear SpatioTemporal Channel Gain Map Tracking in Mobile Cooperative Networks*,” 16th IEEE International Workshop on Signal Processing Advances in Wireless Communications (SPAWC 2015), Stockholm, Sweden, June/July 2015.
- ▶ D. S. Kalogerias and A. P. Petropulu, “*Mobi-Cliques for Improving Ergodic Secrecy in Fading Wiretap Channels under Power Constraints*,” 39th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP 2014), Florence, Italy, May 2014 (*invited*).
- ▶ D. S. Kalogerias and A. P. Petropulu, “*RIP Bounds for Naively Subsampled Scrambled Fourier Sensing Matrices*,” 48th Annual Conference on Information Sciences & Systems (CISS 2014), Princeton, NJ, USA, March 2014.
- ▶ D. S. Kalogerias and A. P. Petropulu, “*MC-MIMO Radar: Recoverability and Performance Bounds*,” 1st IEEE Global Conference on Signal and Information Processing (GlobalSIP 2013), Austin, TX, USA, December 2013.
- ▶ D. S. Kalogerias, S. Sun and A. P. Petropulu, “*Sparse Sensing in Colocated MIMO Radar: A Matrix Completion Approach*,” 13th IEEE International Symposium on Signal Processing and Information Technology (ISSPIT 2013), Athens, Greece, December 2013 (*invited*).
- ▶ D. S. Kalogerias and A. P. Petropulu, “*On the Coherence Properties of Random Euclidean Distance Matrices*,” 14th IEEE International Workshop on Signal Processing Advances in Wireless Communications (SPAWC 2013), Darmstadt, Germany, June 2013.
- ▶ D. S. Kalogerias, N. Chatzipanagiotis, M. M. Zavlanos and A. P. Petropulu, “*Mobile Jammers for Secrecy Rate Maximization in Cooperative Networks*,” 38th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP 2013), Vancouver, Canada, May 2013.
- ▶ D. S. Kalogerias and A. P. Petropulu, “*On the Coherence Properties of Random Euclidean Distance Matrices*,” 1st IEEE/ACM workshop on Signal Processing Advances in Sensor Networks (SPAdS-Nets 2013), Philadelphia, PA, USA, April 2013.

Preprints, Technical Reports and Other Publications

- ▶ D. S. Kalogerias and A. P. Petropulu, “*Spatially Controlled Relay Beamforming: 2-Stage Optimal Policies*,” extended preprint, May 2017. Available [here](#).
- ▶ D. S. Kalogerias and A. P. Petropulu, “*Sequential channel state tracking & spatiotemporal channel prediction in mobile wireless sensor networks*,” CSPL Technical Report, Rutgers, The State University of New Jersey, 2015. Available [here](#).

Research Grants/Funding

- ▶ NSF CCF 1526908, “*Spatiotemporally Varying Channel Map Estimation and Tracking in Wireless Networks*,” 09/01/2015 - 08/31/2018, \$500,000, with A. P. Petropulu (Principal Investigator) and W. Trappe (*while being a graduate student*).

Invited Talks (Past & Upcoming)

Recursive Optimization of Convex Risk Measures: Mean-Semideviation Models

11/2018

INFORMS Annual Meeting, Phoenix, AZ, USA

General Session on Optimization for Robust and Risk-Aware Learning

<i>Recursive Optimization of Mean-Semideviation Risk Measures with Variable Assessment</i>	10/2018
University of Florida, Gainesville, FL, USA	
Workshop on Risk Management Approaches in Engineering Applications	
<i>Recursive Optimization of Mean-Semideviation Risk Measures with Variable Assessment</i>	6/2018
Siemens Corporate Technology, Princeton, NJ, USA	
Autonomous Systems and Control Research Group	
<i>Spatially Controlled Relay Beamforming</i>	5/2017
Stevens Institute of Technology, Hoboken, NJ, USA	
Department of Electrical & Computer Engineering	
<i>Enhancing QoS in Beamforming Networks: Mobile Beamformers and Optimal Motion Policies</i>	12/2016
55th IEEE Conference on Decision & Control (CDC 2016), Las Vegas, NV, USA	
Workshop on Communication-Aware Control and Robotics	

Teaching Experience

Teaching Assistant	2013 - 2015
<i>Department of ECE, Rutgers, The State University of New Jersey</i>	
"Linear Systems & Signals" (undergraduate, Head TA)	<i>Fall 2015</i>
"Probability and Random Processes" (undergraduate)	<i>Spring 2015</i>
"Stochastic Signals & Systems" (graduate)	<i>Fall 2013</i>
Teaching Assistant	2011 - 2012
<i>CEID, University of Patras</i>	
"Digital Signal Processing" (undergraduate)	<i>Spring 2012</i>
"Digital Communications" (undergraduate)	<i>Fall 2011</i>

Memberships and Technical Activities

Institute for Operations Research and the Management Sciences (INFORMS)

Institute of Electrical and Electronics Engineers (IEEE)

IEEE Control Systems Society

IEEE Signal Processing Society

Institute of Mathematical Statistics (IMS)

Journal Reviewer Activity:

- ▶ IEEE Transactions on Signal Processing, Automatic Control, Information Theory, Signal & Information Processing over Networks, Information Forensics & Security, Wireless Communications, Neural Networks and Learning Systems
- ▶ IEEE Sensors Journal
- ▶ IEEE Signal Processing Letters
- ▶ MDPI Entropy
- ▶ IET Signal Processing
- ▶ EURASIP Journal on Wireless Communications and Networking

Conference Reviewer Activity:

- ▶ International Conference on Machine Learning (ICML)
- ▶ IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)
- ▶ IEEE Conference on Information Sciences and Systems (CISS)
- ▶ IEEE Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP)
- ▶ IEEE Global Communications Conference (GLOBECOM)
- ▶ IEEE Wireless Communications & Networking Conference (WCNC)

- ▶ European Signal Processing Conference (EUSIPCO)

Languages

English (Full Professional Fluency)
Greek (Native)

Citizenships

Hellenic (Citizen of Greece)

Other Interests

Music Theory/Composition, Music/Sound Production, the Electric Guitar, Racquetball, Running, Swimming.

Courses (Registered/Audited)

Rutgers.....

- ▶ Stochastic Signals & Systems (ECE / Instructor: *Athina Petropulu*)
- ▶ Digital Signals & Filters (ECE / Instructor: *Waheed Bajwa*)
- ▶ Nonlinear Optimization (Operations Research - Rutcor / Instructor: *Jonathan Eckstein*)
- ▶ Computing Motion: Search, Planning, Control & Learning (Computer Science / Instructor: *Kostas Bekris*)
- ▶ Information Theory & Coding (ECE / Instructor: *Anand Sarwate*) (Audit)
- ▶ Independent Study on Measure Theoretic Probability & Nonlinear Filtering in Discrete Time (ECE)
- ▶ Statistical Learning & Optimization (ECE / Instructor: *Anand Sarwate*) (Audit)
- ▶ Independent Study on Approximate Nonlinear Filtering in Discrete Time (ECE)
- ▶ Advanced Probability Theory I (Statistics / Instructor: *Richard Gundy*)
- ▶ Advanced Probability Theory II (Statistics / Instructor: *Richard Gundy*)
- ▶ Independent Study on Multistage Stochastic Programming (ECE)
- ▶ Stochastic Processes (Statistics / Instructor: *Harry Crane*) (Audit)
- ▶ Dynamic Programming (MSIS - Business School / Instructor: *Andrzej Ruszczyński*) (Audit)

Princeton.....

- ▶ Stochastic Optimization (ORFE / Instructor: *Warren Powell*) (Audit)