GEORGIOS I. PAPAYIANNIS

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PERSONAL & CONTACT INFORMATION

Date of birth:	December, 3, 1986
Marital Status:	Married (1 child)
Military Obligations:	Fulfilled (21/01/2016 - 21/10/2016, MTS)
Tel. (office):	+30 210 4581642

EDUCATION

PhD in Statistics, Athens University of Economics & Business 2015
School of Information Sciences and Technology, Department of Statistics
Thesis: *"Robust Decision Theory under Uncertainty and Convex Risk Measures Computation"*
Supervisor: Professor A.N. Yannacopoulos

MSc in Statistics, Athens University of Economics & Business 2011
School of Information Sciences and Technology, Department of Statistics
Thesis: *"Backward Stochastic Differential Equations and their Applications in Finance"*

BSc in Statistics, Athens University of Economics & Business 2009
School of Information Sciences and Technology, Department of Statistics

PROGRAMMING SKILLS

Packages	MS Excel, E-views, SPSS
Languages	MATLAB/Octave, R, Python (basic knowledge)
Text Writing	LaTEX, MS Office

PROFESSIONAL EXPERIENCE

Hellenic Naval Academy (HNA), Greece
Department of Naval Sciences, Section of Mathematics
Lecturer (*Computational mathematics & their applications*) 05/2020 - Present
Adjunct Lecturer (*Operational Research*) 11/2016 - 05/2020

Teaching: ◇ Game Theory & Decision Making ◇ Operational Research - Linear Programming ◇ Statistical Modelling ◇ Numerical Analysis ◇ Optimization - Nonlinear Programming ◇ Statistics

National & Kapodistrian University of Athens (NKUA), Greece
School of Science, Department of Digital Industry Technologies
Adjunct Lecturer 03/2020 - 09/2020

Teaching: ◇ Probability & Statistics

Athens University of Economics & Business (AUEB), Greece
School of Information Sciences and Technology, Department of Statistics
Adjunct Lecturer 10/2016 - 06/2019

Teaching: ◇ Estimation Theory and Hypothesis Testing (2018-19) ◇ Measure and Integration Theory (2017-18) ◇ Numerical Methods in Statistics (2016-19) ◇ Probability Theory (2016-17)

RESEARCH INTERESTS

◇ Convex risk measures for actuarial, financial and environmental risk
◇ Deep learning approaches for uncertain data
◇ Fréchet mean and its applications in economics, finance, management science and statistics
◇ Functional statistics and semiparametric variants through shape deformation models
◇ Learning under multiple information sources and construction of optimal aggregate models
◇ Numerical optimization schemes based on variational techniques
◇ Probabilistic scenarios building and generation
◇ Risk modelling and risk quantification under model uncertainty
◇ Robust decision making under uncertainty in economics and finance
◇ Supervised and unsupervised statistical learning methods for manifold-valued data

PARTICIPATION IN RESEARCH PROGRAMS

◇ WATER FUTURES (ERC), Athens University of Economics & Business 2022 -
Smart Water Futures: Designing the Next Generation of Urban Drinking Water Systems
Role: Water distribution networks modelling, water consumption monitoring and probabilistic scenario generation related to socio-economic and climate factors
PI: Prof. P. Koundouri

◇ AWESOME (H2020), Athens University of Economics & Business 2021 -
Managing Water, Ecosystems and food across sectors and Scales in the South Mediterranean
Role: Socio-economic scenarios building and simulation using probabilistic approaches and ecosystem services valuation
PI: Prof. P. Koundouri

◇ DRASI II, AUEB Research Center 2018-19
Statistical shape theory and applications in statistical process monitoring and control
Role: PostDoc Researcher
Academic Advisor: Prof. S. Psarakis

◇ MULTI-INSULARITY, University of the Aegean 2014-15
Modern migration flows in the Aegean
Role: Database development and quantitative and statistical analysis of the collected data
PI: Prof. E. Petracou

PUBLISHED WORK

In Peer-reviewed Journals

1. Papayiannis, G. I. (2023) A framework for treating model uncertainty in the asset liability management problem. *Journal of Industrial and Management Optimization* (*Accepted, To appear*)

2. Papayiannis, G. I. (2022). Robust policy selection and harvest risk quantification for natural resources management under model uncertainty. *Journal of Dynamics & Games*, **9**(2), 203–217. https://doi.org/10.3934/jdg.2022004

3. Papayiannis, G. I., Domazakis, G. N., Drivaliaris, D., Koukoulas, S., Tsekrekos, A. E. & Yannacopoulos, A. N. (2021). On clustering uncertain and structured data with Wasserstein barycenters and a geodesic criterion for the number of clusters. *Journal of Statistical Computation and Simulation*, **91**(13), 2569–2594. https://doi.org/10.1080/00949655.2021.1903463

4. Kampelis, N., Papayiannis, G. I., Kolokotsa, D., Galanis, G. N., Isidori, D., Cristalli, C. & Yannacopoulos, A. N. (2020). An integrated energy simulation model for buildings. *Energies*, **13**(5), 1170. https://doi.org/10.3390/en13051170

5. Papayiannis, G. I., Galanis, G. N. & Yannacopoulos, A. N. (2018). Model aggregation using optimal transport and applications in wind speed forecasting. *Environmetrics*, **29**(8), e2531. https://doi.org/10.1002/env.2531

6. Petracou, E. V., Domazakis, G. N., Papayiannis, G. I. & Yannacopoulos, A. N. (2018). Towards a Common European Space for Asylum. *Sustainability*, **10**(9), 2961. https://doi.org/10.3390/su10092961

7. Papayiannis, G. I. & Yannacopoulos, A. N. (2018). Convex risk measures for the aggregation of multiple information sources and applications in insurance. *Scandinavian Actuarial Journal*, **2018**(9), 792–822. https://doi.org/10.1080/03461238.2018.1461129

8. Papayiannis, G. I. & Yannacopoulos, A. N. (2018). Numerical computation of convex risk measures. *Annals of Operations Research*, **260**, 417–435. https://doi.org/10.1007/s10479-016-2284-3

9. Papayiannis, G. I. & Yannacopoulos, A. N. (2018). A learning algorithm for source aggregation. *Mathematical Methods in the Applied Sciences*, **41**(3), 1033–1039. https://doi.org/10.1002/mma.4086

10. Papayiannis, G. I., Giakoumakis, E. A., Manios, E. D., Moulopoulos, S. D., Stamatelopoulos, K. S., Toumanidis, S. T. & Yannacopoulos, A. N. (2018). A functional supervised learning approach to the study of blood pressure data. *Statistics in medicine*, **37**(8), 1359–1375. https://doi.org/10.1002/sim.7587

Book Chapters

1. Hazapi, O., Lagopati, N., Pezoulas, V. C., Papayiannis, G. I., Fotiadis, D. I., Skaltsas, D., Vergetis, V., Tsirigos, A., Stratis, I. G., Yannacopoulos, A. N. & Gorgoulis, V. G. (2022). Machine Learning: A Tool to Shape the Future of Medicine. In: Roy, S.S., Taguchi, YH. (eds) *Handbook of Machine Learning Applications for Genomics. Studies in Big Data*, vol 103. Springer, Singapore. https://doi.org/10.1007/978-981-16-9158-4_12

2. Koundouri, P., Papayiannis, G. I. & Yannacopoulos, A. N. (2022). Optimal Control Approaches to Sustainability under Uncertainty. In: Leal Filho, W., Dinis, M.A.P., Moggi, S., Price, E., Hope, A. (eds) *SDGs in the European Region . Implementing the UN Sustainable Development Goals – Regional Perspectives*. Springer. https://doi.org/10.1007/978-3-030-91261-1_46-1

3. Papayiannis, G. I., Petracou, E. V. & Yannacopoulos, A. N. (2022). Probabilistic population scenarios: The case of four North East Mediterranean European countries (*Accepted, to appear*)

Submitted Work

1. Koundouri, P., Papayiannis, G. I., Petracou, E. & Yannacopoulos, A. N. A decision making framework for multiple agents under model uncertainty with applications in environmental policy making (*Submitted, Under review*).

2. Koundouri, P., Papayiannis, G. I., Vassilopoulos, A. & Yannacopoulos, A. N. A general framework for the generation of probabilistic socio-economic scenarios and risk quantification concerning food security with application in the upper river Nile basin (*Submitted, Under review, temporary link:* https://ideas.repec.org/p/aue/wpaper/2203.html)

3. Papayiannis, G. I., Psarakis, S. & Yannacopoulos, A. N. Functional profiles monitoring using the framework of the deformation models and applications in urban air quality surveillance. (*Submitted, Under review, temporary link:* https://doi.org/10.48550/arXiv.2010.02968)

4. Papayiannis, G. I. Static Hedging of Freight Risk under Model Uncertainty (*Submitted, Under review, temporary link:* https://doi.org/10.48550/arXiv.2207.00862).

Working Papers

1. Androulakis, E. A., Papayiannis, G. I. Penalized least squares in the Wasserstein space and applications in model selection. (*Work in progress*).

2. Asensio, P., Leblond, J., Papayiannis, G. I., Stratis, I. G. & Yannacopoulos, A. N. Time-dependent inverse source problems in EEG / MEG (*Work in progress*).

3. Calvia, A., Gozzi, F. Leocata, M. Papayiannis, G. I., Xepapadeas, A. & Yannacopoulos, A. N. AK model on networks (*Work in progress*).

PARTICIPATION IN CONFERENCES

1. A risk quantification framework concerning food security under different probabilistic socio-economic and climate scenarios in *8th Cross-Sector Social Interactions Symposium*, Wageningen University, June 2022.
2. A general framework for the generation of probabilistic socioeconomic scenarios and risk quantification concerning food security with application in the Upper Nile river basin in *10th IAERE Annual Conference*, Cagliari, April 2022.
3. Understanding multi-sectoral Water-Energy-Food trade-offs: Bayesian Scenario Building cross co-designed and validated by Multi-Actor Working Groups in *9th IAERE Annual Conference*, Brescia, April 2021 (jointly with E. Akinsete).
4. Dependence modeling with applications in actuarial practice: A hands on approach in *16th Summer School on Risk, Finance and Stochastics*, AUEB, July 2019, Athens (jointly with A. N. Yannacopoulos).
5. Optimal transport & risk management in *15th Summer School in Stochastic Finance*, AUEB, July 2018, Athens.
6. Convex risk measures for the aggregation of multiple information sources: Applications in Natural Resources Management in *ORCOS 2018*, TU Wien, July 2018, Vienna.
7. Statistical manifolds and Wasserstein spaces for data analysis and environmental applications in *First Congress of Greek Mathematicians*, Hellenic Mathematical Society, June 2018, Athens (jointly with G. Galanis).
8. Fréchet Risk measures and real option pricing in *14th Summer School in Stochastic Finance*, AUEB, September 2017, Athens.
9. Learning under multiple priors in *13th Summer School in Stochastic Finance*, AUEB, July 2016, Athens.
10. Numerical computation of convex risk measures & applications in static hedging in *12th Summer School in Stochastic Finance*, AUEB, July 2015, Athens.

TEACHING IN POST-GRADUATE PROGRAMS

MSc in Maritime Science & Technology (University of Piraeus & HNA)
◇ Theory of Risk and Reliability with Applications in Marine Systems 2021-23
Topic: Reliability Analysis - Models and Assessment Methods for Systems

MSc in Quantitative Management of Actuarial & Financial Risk, (AUEB)
◇ Financial Mathematics and Computational Applications 2020-23
◇ Nonlinear Optimization Methods and Portfolio Theory 2020-23

LECTURE NOTES

◇ Computational Finance ◇ Estimation theory and hypotheses testing ◇ Game theory and decision making ◇ Linear programming ◇ Numerical methods and applications ◇ Optimization and nonlinear programming ◇ Probability theory ◇ Portfolio theory and optimization approaches ◇ Reliability analysis ◇ Statistics

SUPERVISIONING

Participation in Advisory PhD Committees

C. Kaskouras Department of Statistics, AUEB. 2021 - Current
Topic: *Stochastic models for electricity markets*

Dissertations in Postgraduate Programmes

In Progress

2023 (expected), I. Siachos, *Modelling dependence structures through Copulae*, MSc in Quantitative Management of Actuarial and Financial Risk, Department of Statistics, AUEB

Completed

2022, D. Alexandridis, *Dependence Modeling with Copula Vines.* (Jointly with A.N. Yannacopoulos), MSc in Quantitative Management of Actuarial and Financial Risk, Department of Statistics, AUEB

2022, M. Koutsouraki, *Portfolio Selection under Convex Risk Measures.* (Jointly with A.N. Yannacopoulos), MSc in Quantitative Management of Actuarial and Financial Risk, Department of Statistics, AUEB

2021, P. Danias, *Portfolio Optimization with Copulae.* (Jointly with A.N. Yannacopoulos), MSc in Applied Statistics, Department of Statistics, AUEB

2019, S. Gkila, *Convex optimization and applications.* (Jointly with A.N. Yannacopoulos), MSc in Statistics, Department of Statistics, AUEB

2019, N. Raptopoulou, *Stochastic and Statistical Modeling of Financial Risk: A Voyage through its Theoretical, Methodological and Computational Aspects.* (Jointly with A.N. Yannacopoulos), MSc in Statistics. Department of Statistics, AUEB

2018, M. Labrinakou, *Graph theory and applications in clustering financial data.* (Jointly with A.N. Yannacopoulos), MSc in Statistics, Department of Statistics, AUEB

2017, D. Dristellas, *RKHS and applications in functional regression.* (Jointly with A.N. Yannacopoulos), MSc in Statistics, Department of Statistics, AUEB

Dissertations in BSc Programmes

Department of Naval Sciences, HNA

In Progress

2023 (expected), K. Gkogkas, *Optimal tuning of projectile's launching control parameters under uncertainty with respect to the environmental conditions.* (Jointly with A. Tsapalis)

2023 (expected), A. Hatzimitakou, *Statistical learning methods and applications* (Jointly with E. Androulakis)

2023 (expected), G. Pantelias, *The weapon target assignment problem with stochastic optimization methods* (Jointly with E. Androulakis)

2023 (expected), C. Sarrigeorgiou, *Dynamic Programming and its applications in optimal decision making in operational problems*

Completed

2022, X. Kleniati, *Warfare dynamics modeling and applications* (Jointly with S. Kyritsi-Yiallourou)

2022 M. Vythoulkas, *Projectile trajectory estimation under uncertainty on the environmental conditions.* (Jointly with A. Tsapalis)

2021, K. Katsaros, *Mathematical modeling techniques with neural networks and their applications in ship motion modeling and maneuvering prediction.* (Jointly with S. Kyritsi-Yiallourou and E. Papageorgiou)

2020, T. Gourgiotis, *The Cuban missile crisis through a game-theoretic perspective.* (Jointly with G. Galanis)

2020, P. Michailidou, *Mathematical models of armed conflicts and applications.* (Jointly with S. Kyritsi-Yiallourou)

2019, N. Archontoulis, *Game theory and applications in negotiations.* (Jointly with G. Galanis)

2019, T. Papageorgiou, *Game theory and applications in defence.* (Jointly with G. Galanis)

2018, I. A. Evangelou, *Statistical optimization methods for simulation models of environmental parameters and applications in wave height forecasting.* (Jointly with G. Galanis)

Department of Statistics, AUEB

Completed

2022, C. Salis, *Deep Learning theory and applications in quantitative finance* (Jointly with A.N. Yannacopoulos)

2017, F. Kontogiannis, *Diffusion processes and stochastic differential equations.* (Jointly with A. N. Yannacopoulos)

2017, I. Rotous, *Gaussian processes in Hilbert spaces.* (Jointly with A. N. Yannacopoulos)

OTHER ACTIVITIES

Scientific Collaborations

◇ Athena Research and Innovation Center - Sustainable Development Unit (Associate Researcher)
◇ Mathematical Modelling and Applications Laboratory, HNA (Regular Member)
◇ Research Laboratory on Socio-Economic and Environmental Sustainability, AUEB (Associate Researcher)
◇ SDSN Global Climate Hub - Climate & Energy Systems Modelling Unit (Working Group Member)
◇ Stochastic Modelling and Applications Laboratory, AUEB (External Member)

Organization of Conferences & Seminars

◇ Co-organizer of the annual Summer School in Risk, Finance and Stochastics

Refereeing Activities

◇ Mathematical Reviews (AMS), Atmosphere (MDPI), Energies (MDPI), Journal of Dynamics and Games (AIMS), Journal of Numerical Algebra, Control and Optimization (AIMS), Journal of Industrial and Management Optimization (AIMS), Naval Research Logistics, PLOS ONE