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Research Interests

Statistical surveillance and sequential detection. Change-point detection as applied to signal processing, decentralized detection, network security, quality control and finance. Optimal stopping, stochastic optimization problems in the context of stochastic dynamic programming, game theory and engineering.

Positions Held

- **Assistant Professor**, Graduate Center, C.U.N.Y., Department of Mathematics, (May 2009-present).
- **Assistant Professor**, Graduate Center, C.U.N.Y., Department of Computer Science, (May 2008-present).
- **Visitor**, University of Southern California, Department of Mathematics (Winter break, 01/09/08-01/15/08).
Collaborator: Dr. A. G. Tartakovsky.
- **Assistant Professor**, Brooklyn College, C.U.N.Y, Department of Mathematics (September 2007-present).
- **Visiting research collaborator**, Princeton University, Department of Electrical Engineering (September 2007-2008)
- **Joint position**
 1. **Assistant Professor**, Drexel University, Department of Mathematics (September 2006-August 31st 2007).
 2. **Associate Research Scholar**, Princeton University, Department of Electrical Engineering (September 2006-August 31st 2007).
Under the supervision of Dr. H. V. Poor.
- **Postdoctoral Research Associate**, Princeton University, Department of Electrical Engineering (September 2005-August 2006).
Under the supervision of Dr. H. V. Poor.
- **Postdoctoral fellow**, Columbia University, Department of Statistics (01/2005-08/2005).
Instructor of W4150, Statistics & Probability (Spring 2005).
- **Visitor**, INRIA, Rennes France (Winter breaks 2002-2003, 2003-2004).
Supervisor: Dr. G. V. Moustakides.
- **Fellowship student**, Columbia University (2000-2004).

- **OGS (Ontario Graduate Scholarship) student**, University of Toronto (1999-2000).

- **Associate Financial Engineer**, Algorithmics Inc., Toronto.
Applied risk management research team (March - September 1999).
- **Summer Intern: Financial Analyst**, Citibank, Toronto, Canada – Global Derivatives (May-August 1998).

- **NSERC (Natural Science and Engineering Research Council of Canada) student, University of Waterloo (1997-1998).**
Master's essay in pricing Interest Rate Derivative Securities using simulation and implementing variance reduction techniques.

Education

- Ph.D., with Distinction, Statistics Department, Columbia University, February 2005.
- M.Phil., Statistics Department, Columbia University, May 2003.
- Enrolled in the Ph.D. program of the Department of Statistics, University of Toronto, Toronto, Canada (Sept 1999 - August 2000).
- Master in Mathematics (Statistics-Finance), Centre for Advanced Studies in Finance, University of Waterloo, Waterloo, Canada, February 1999.
- B.Sc., with High Distinction, Statistics and Actuarial Science, New College, University of Toronto, Toronto, Canada, May 1997.

Invited talks

- NIPS(Neural Science and Information Systems) Conference, Vancouver, Canada, to be held December 11-12th, 2009.
Special Workshop on change-point detection.
- University of Connecticut, Department of Statistics, to be held on September the 16th, 2009.
Title: Decentralized quickest change detection through one shot schemes and coupled sensor systems.
- 2nd International workshop on Sequential Methodologies, Troyes France, June 15-17, 2009.
Special session on sequential methods in sensor networks.
Title: One shot schemes in discrete and continuous time models.
- Georgia Institute of Technology, Department of Industrial and Systems Engineering, April the 8th, 2009.
Title: One shot schemes for decentralized quickest change detection and quickest detection in coupled systems.
- The Bronx Community College, C.U.N.Y., March the 24th, 2009.
Title: Statistical Quality Control.
- Columbia University, Department of Electrical Engineering, March the 23rd, 2009.
Title: One shot schemes for decentralized quickest change detection and quickest detection in coupled systems.
- AMS meeting Washington DC, January 6-8, 2009.
Title: Formulas for stopped diffusion processes with stopping times based on drawdowns and drawups.
- University of Delaware, Mathematics Department, December the 19th, 2008.
Title: Quickest detection and financial applications.
- Stevens Institute of Technology, Department of Mathematical Science, November the 14th, 2008.
Title: Quickest change detection in decentralized systems.
- IWAP Annual Meeting, Compiègne, France, July 7-10, 2008.
 1. Special session on stochastic optimization and dice games,
Title: Drawdowns and Rallies in games of finite horizon.
 2. Special session on interface of applied probability with change point detection phenomena,
Title: Quickest detection in multi-source systems.

- 11th International Conference on Information Fusion, Cologne Germany, June 30-July 3, 2008.
Special session in distributed inference and decision-making in multi-sensor systems.
Title: One shot schemes for decentralized quickest change detection sensors.
- CUNY Graduate Center (Applied Math seminar), February 29th -March 7th, 2008.
Mini-lecture series on Mathematical Finance.
- CUNY Graduate Center (Statistics seminar), February 29th, 2008.
Title: Quickest detection in Hidden Markov Models.
- University of Southern California, January 14th, 2008.
Title: Detecting a regime change and connections to mathematical finance.
- CUNY Graduate Center (Probability seminar), December 4th, 2007.

Title: Optimal quickest detection of two-sided alternatives and connections to drawdown and rally processes.
- Advanced probability course in topics of Stochastic Differential Equations and Applications, Columbia University, November 29th, 2007.
Title: The best 2-CUSUM stopping rules for quickest detection of two-sided alternatives.
- AMS meeting on Financial Mathematics, October 13-14th, 2007.
Title: The best 2-CUSUM stopping rules for quickest detection of two-sided alternatives.
- Courant Institute of Mathematical Sciences, Mathematical Finance seminar, New York University, October 4th 2007.
Title: Optimal quickest detection of two-sided alternatives and connections to drawdown and rally processes.
- ISI Annual Meeting, August 22nd-29th, Lisbon Portugal, 2007.
Title: Optimal quickest detection of two-sided alternatives in a BM model.
- ASMDA Annual Meeting, May 29th-June 2nd, Chania Crete, Greece, 2007.
Title: Drawdowns and Rallies in a Brownian motion model.
- Kent University, Kent Ohio, April 27th, 2007.
Title: Detecting a regime change and connections to mathematical finance.
- Fox School of Business, Temple University, September 22nd, 2006.
Title: Detecting a regime change and connections to mathematical finance.
- University of Waterloo, July 20th, 2006.
Title: The quickest detection problem and connections to finance.
- Columbia University, April 19th, 2006.
Title: The quickest detection problem and connections to finance.
- Carnegie Mellon University, April 17th, 2006.
Title: Detecting a regime change & connections to mathematical finance.
- City College, City University of New York, March 21st, 2006.
Title: The quickest detection problem and its connection to finance.
- Bloomberg New York, December 16th, 2005.
Title: How to detect a regime change.
- 13th INFORMS Applied Probability Conference, Ottawa Ontario, July 6-8, 2005.
Title: CUSUM rules in change-point detection of two-sided alternatives.
- City College, City University of New York, December 2nd, 2004.
Title: Change-point detection of multiple alternatives in the Brownian motion model & its connection to the gambler's ruin problem with relative wealth perception.

- Lehigh University, Bethlehem Pennsylvania, November 17th, 2004.
Title: The gambler's ruin problem with relative wealth perception & its connection to the gambler's ruin problem with relative wealth perception.
- IBM - T. J. Watson Research Center, Yorktown Heights, New York, October 29th, 2004.
Title: CUSUM rules for change-point detection in the Brownian motion model with multiple alternatives and its connection to the gambler's ruin problem.
- Courant Institute of Mathematical Sciences, New York University, June 7th, 2004.
Title: Detecting Changes in Random Processes.

Presentations

- Presentation at the 15th INFORMS Applied Probability Society meeting, July 12th-15th, Ithaca, New York, 2009.
Title: Drawdowns and rallies in a finite time-horizon and applications.
- Presentation at the IWSM (First International Workshop in Sequential Methodologies), July 22nd-25th, Auburn AL, 2007.
Title: The best 2-CUSUM stopping rules for quickest detection of two-sided alternatives in BM model.
- Presentation at the IMS Annual meeting, July 29th-Aug. 4th, Rio de Janeiro, Brazil, 2006.
Title: The best 2-CUSUM stopping rules for quickest detection of two-sided alternatives.
- Presentation at the Joint Statistical Meeting, Aug. 7-11, Minneapolis, 2005.
Title: Optimal two-sided CUSUM stopping rules for change-point detection in the Brownian motion model with two-sided alternatives.
- Presentation at the 30th conference on Stochastic Processes and its Applications, June 26-July 1, Santa Barbara, 2005.
Title: Change-point detection in the Brownian motion model with two-sided alternatives.
- Presentation at the Joint Statistical Meeting, Aug. 8-12, Toronto, 2004.
Title: Optimal and Asymptotically Optimal CUSUM rules for change point detection in the Brownian Motion Model with multiple alternatives.

Publications

- Book
Title: "Quickest detection". Authors: H. V. Poor, O. Hadjiliadis. (Publisher: Cambridge University Press).
- Thesis
Title: Change-point detection of two-sided alternatives in the Brownian motion model and its connection to the gambler's ruin problem with relative wealth perception.
My thesis is available at
<http://userhome.brooklyn.cuny.edu/ohadjiliadis>.
- Articles
 1. Hadjiliadis, O. and Moustakides, G.V. (2006) "Optimal and Asymptotically Optimal CUSUM rules for change point detection in the Brownian Motion Model with multiple alternatives", *Theory of Probability and its Applications (Teoriya Veroyatnostei i ee Primeneniya, 2005)*, issue 1, vol. 50, pp 131-144.
 2. Hadjiliadis, O. (2005) "Optimality of the 2-CUSUM Drift Equalizer Rules among the Harmonic Mean 2-CUSUM rule class for detecting two-sided alternatives in the Brownian Motion model", *Journal of Applied Probability*, issue 4, vol. 42, pp 1183-1193.
 3. Hadjiliadis, O. and Vecer, J. (2006) "Drawdowns Preceding Rallies in the Brownian Motion Model", *Quantitative Finance*, issue 5, vol. 6, pp 403-409.
 4. Hadjiliadis, O. and Poor, H. V. (2009) "On the best 2-CUSUM rules for quickest detection of two-sided alternatives in a Brownian motion model", *Theory of Probability and its applications (Teoriya Veroyatnostei i ee Primeneniya, 2008)*, issue 3, vol. 53, pp 610-622.

5. Hadjiliadis, O., Hernandez-del-Valle, G. and Stamos, I., (2009) "A comparison of 2-CUSUM stopping rules for quickest detection of two-sided alternatives in a Brownian motion model", *Sequential Analysis*, issue 1, vol. 28, pp 92-114.
 6. Pospisil, L., Vecer, J. and Hadjiliadis, O., (2009) "Formulas for stopped diffusion processes with stopping times based on drawdowns and drawups", *Stochastic Processes and its Applications*, issue 8, vol. 119, pp. 2563-2578.
 7. Hadjiliadis, O., Zhang H. and Poor, H.V., (2009) "One shot schemes for decentralized quickest change detection", *IEEE Transactions on Information Theory*, issue 7, vol. 55, pp. 3346-3359.
 8. Zhang, H. and Hadjiliadis, O., (2009) "Drawdowns and Rallies in a finite time-horizon", (accepted for publication. To appear in the special issue of Methodology and Computing in Applied Probability 2009).
 9. Zhang, H. and Hadjiliadis, O., (2009) "Formulas for the Laplace transform of stopping times based on drawdowns and drawups"(submitted on 04-24-09).
- Technical reports
 1. Vecer, J., Xu, M. and Hadjiliadis, O. (2003) "Risk Minimization Control for Beating the Market Strategies", Technical Report, Statistics Department, Columbia University (Fall 2003).
 - Conference proceedings
 1. Hadjiliadis, O. and Moustakides, G.V. (2004) "CUSUM rules for detecting a regime change in the Brownian Motion model with multiple alternatives", *2004 Proceedings of the American Statistical Association*, Quality Control Section [CD-ROM], Toronto, ON: American Statistical Association.
 2. Tsechpenakis, G. and Metaxas, D. and Hadjiliadis O. and Neidle C.(2006) "Robust on-line change-point detection in video sequences" 2nd IEEE Workshop on Vision for Human Computer Interaction (V4HCI), in conjunction with IEEE Conference on Computer Vision and Pattern Recognition (CVPR06), New York, NY.
 3. Hadjiliadis, O., Hernandez-del-Valle , G. and Stamos, I., (2008) "A comparison of 2-CUSUM stopping rules for quickest detection of two-sided alternatives in a Brownian motion model", (Proceedings of the International Workshop in Applied Probability), Compiègne, France.
 4. Hadjiliadis, O., (2008) "On a collision local time formula", (Proceedings of the International Workshop in Applied Probability), Compiègne, France.
 5. Hadjiliadis, O., Zhang H. and Poor, H.V., (2008) "One shot schemes for decentralized quickest detection", (Proceedings of the 11th International conference on Information Fusion), Cologne, Germany.
 6. Hadjiliadis, O., (2008) "Drawdowns and Rallies in games of finite horizon", (Proceedings of the International Workshop in Applied Probability), Compiègne, France.
 7. Hadjiliadis, O., Zhang H. and Poor, H.V., (2009) "One shot schemes in discrete and continuous time models", (Proceedings of the 2nd International Workshop on Sequential Methodologies), Troyes, France.
 8. Hadjiliadis, O., Schaefer T. and Poor, H.V., (2009) "Quickest detection in coupled systems" (accepted on July the 9th of 2009 to the 48th IEEE Conference on Decisions and Control), Shanghai, China.

**Reviewer
Editorial service**

- Annals of Applied Probability
- Journal of Quantitative Finance
- Mathematical Reviews
- IEEE Transactions on Information Theory
- IEEE Transaction on Signal Processing

- Invited to serve as panel reviewer on the 12th IEEE conference on Information Fusion

Funding

- PSC-CUNY grant, \$3,525, (2008-2009)
Title: Quickest detection in multi-source systems.
- CUNY Collaborative grant with Dr. Tobias Schaefer, \$38,000, (2008-2009)
Title: Multi-dimensional quickest detection.
- PSC-CUNY grant, \$2,960, (2009-2010)
Title: Sequential identification in multi-sensor systems.
- Quickest detection in correlated multi-sensor systems,
NSA, Young investigator's program, \$15,000+ \$15,000 , 1+1 years, (Starting date September the 1st, 1009).
- MSC Sequential Classification and Detection via Markov Models in Point Clouds of Urban Scenes,
NSF CCF # 0916452 , \$380,000, 3 years, PI: Ioannis Stamos, Co-PI: O. Hadjiliadis, (Starting date September the 1st, 2009).
- Sequential Detection and Classification in 3D Computer Vision,
NSF DMS-IGMS # 0929317, \$100,000, 1 year, PI: O. Hadjiliadis, (Starting date September the 1st, 2009).

Committees

- Thesis Defense Committee for the defense of Libor Pospisil, Columbia University, August, 2008.
- Graduate Center Committee for the creation of the Certificate in Computational Finance 2008.
- Thesis Defense Committee for the defense of Olivier Nimeskern, Columbia University, September 2006.
- "Chair Search Committee" member: November 1996 -January 1997.
Department of Statistics, University of Toronto.

Graduate Advising

Advisor of graduate student Hongzhong Zhang enrolled at the Mathematics Phd program at the Graduate Center.

Teaching (Instructor/Professor)

- CSC 84020, Quickest Detection of abrupt changes, Graduate Center, C.U.N.Y., Spring 2009.
- PHYS 85200, Science of Finance, Graduate Center, C.U.N.Y., Fall 2008.
- MATH 90000, Dissertation supervision, Graduate Center, C.U.N.Y., Fall 2008, Spring 2009.
(Graduate student Hongzhong Zhang)
- MATH 88.1, Independent undergraduate research, Fall 2008. (Undergraduate student David Stulman)
- MATH 52, Mathematical Statistics, Brooklyn College, C.U.N.Y., Spring 2008.
- MATH 74.3, Financial derivatives and their pricing, Brooklyn College, C.U.N.Y., Spring 2008.
- MATH 74.2, Investment Science, Brooklyn College, C.U.N.Y., Fall 2007.
- MATH 312, Probability & Statistics II, Drexel University, Winter 2007.
- MATH 311, Probability & Statistics I, Drexel University, Fall 2006.

- W4150, Statistics & Probability, Columbia University, Spring 2005.
- W1001, Introduction to Statistical Reasoning, Columbia University, Fall 2004.
- W1111, Introduction to Statistics, Columbia University, Summer 2004.

Curriculum Development

- Development of a new major in mathematics in the area of Operations Research and Financial Engineering.
The major includes courses in Interest rate theory, Investment science, Financial derivatives and their pricing, Probability, Statistics, Time-series analysis and Stochastic processes.
- Math 74.3, Financial derivatives and their pricing,
An extensive interdisciplinary course on the pricing of derivative securities. This is a cross-listed course aimed for both mathematics majors and business majors.
- CSC 84020 Quickest detection of abrupt changes and applications,
An interdisciplinary course at the graduate level drawing from tools such as stochastic dynamic programming and sequential analysis to address problems of regime change in finance, on-line intrusion detection in networks and signal detection and identification in communications. Also an interdisciplinary course geared towards PhD students in Mathematics, Computer Science and Physics.

Honors and Awards

- Fellowship (4 years) at the Department of Statistics in Columbia University, 2000 - 2004.
- Offered NSERC (Natural Science and Engineering Research Council of Canada) Graduate Scholarship (PGS-B), University of Toronto, 2000.
- Ontario Graduate Scholarship (OGS), University of Toronto, 1999 - 2000.
- NSERC (Natural Science and Engineering Research Council of Canada) Graduate Scholarship (PGS-A), University of Waterloo, 1997 - 1998.
- Centre for Advanced Studies in Finance Scholarship, University of Waterloo, 1997 - 1998.
- Offered Ontario Graduate Scholarship (OGS), University of Waterloo, 1997.
- Graduated with highest GPA in Mathematical and Physical Science, New College, University of Toronto, 1997.
Donald G. Ivey Graduation Award in Mathematics and Physical Sciences, University of Toronto, 1997.
- Student Leadership Award, University of Toronto, 1997.
- Scholarship for Academic Excellence and Involvement in the Greek Community, Hellenic Canadian Foundation of Ontario, 1997.
- Samuel Beatty In-Course Scholarship, University of Toronto, 1996.
- New College Council In-Course Scholarship, University of Toronto, 1996 - 1997.
- Dean's Honor List, University of Toronto, 1995, 1996 and 1997.

Languages

Fluent in the following languages:

- English
- French
- Spanish
- Greek

Citizenship

- U.S. permanent resident
- Canadian citizen
- Greek citizen

References will be available upon request