

Ionut Florescu

Assistant Professor of Mathematics
Department of Mathematical Sciences
Stevens Institute of Technology
Castle Point on the Hudson
Hoboken, NJ 07030, USA
ifloresc@stevens.edu (201) 216 5452

EDUCATION

Doctor of Philosophy in Statistics, Purdue University, West Lafayette, Indiana, USA
December 2004. *Primary Research Area:* Mathematics of Finance

Master of Science in Statistics with specialization in Computational Finance Purdue University,
West Lafayette, Indiana, USA; December 2001

Master of Science in Mathematics with specialization in Stochastic Processes University of Bucharest,
Romania; July 1997

HONORS, AWARDS

- NSF-0907371 Conference on Modeling High Frequency Data in Finance; Summer 2009; Hoboken, NJ, Principal Investigator, March 15, 2009 - February 28, 2010. Other related awards received from International Mathematical Union (IMU), American Statistical Association (ASA), Institute of Mathematical Statistics (IMS) and international Association of Financial Engineers (IAFE).
- *Real-time tracking of positions of non-rigid objects in images having changing background*, with Rustam Stolkin, patent pending, 2008, Ref.number: 101995.020900
- Contributor to *Polymorphic track mechanism for a manned or unmanned all-terrain vehicle* patent pending.
- I.W. Burr award for academic excellence and quality of the thesis research, May 2005.
- Purdue Research Foundation Grant, Purdue University, August 2003 - December 2004
- Puskas Memorial Fellowship for the Academic Year 2002-2003, Purdue University
- Merit Scholarship, 1991-1997, University of Bucharest, Romania

PREVIOUS AND PRESENT POSITIONS

Stevens Institute of Technology, Department of Mathematical Sciences, U.S.A.
Assistant Professor (tenure track) Fall 2005 - present

Purdue University, Department of Statistics, U.S.A.
Visiting Assistant Professor, Spring 2005
Teaching Assistant, Fall 1998 - Fall 2004

Romanian Academy, Center for Mathematical Statistics, Bucharest, Romania
Research Assistant, Fall 1997-Spring 1998

University of Bucharest, Department of Physics, Romania
Lecturer, Fall 1997 - Spring 1998

RESEARCH INTERESTS

Probability Theory and Stochastic Analysis

Stochastic Volatility
 Stochastic PDE's
 Numerical Methods for Stochastic Processes
 Nonlinear Stochastic particle filtering
 Monte Carlo Methods
 Tree approximations for Diffusion Processes
 High frequency data analysis

Applications to other fields

The Diffie-Hellman Decision Problem
 Computer Vision Tracking
 Clustering
 Acoustic sensors - detection problem
 Optimal sensor placement and tracking
 Robotics

PUBLICATIONS**Refereed publications.**

1. Florescu I. and C. G. Păsărică, "A study about the existence of leverage effect in Stochastic Volatility models", *Physica A*, 388(4), Feb. 2009, 419-432.
2. Mariani M.C., I. Florescu, M.P. Beccar Varela and E. Ncheuguim, "Long correlations and Levy Models applied to the study of Memory effects in high frequency (tick) data", *Physica A*, 388(8), April 2009, p. 1659-1664
3. Ulibarri C., P. Anselmo, K. Hovespian and I. Florescu "Noise-Trader Risk" And Bayesian Market Making In FX Derivatives: Rolling Loaded Dice?, *International Journal of Finance and Economics*, 2009, vol. 14, issue 3, p. 268-279
4. Stolkin R. and I. Florescu, Probability of detection and optimal sensor placement for threshold based detection systems, *IEEE Sensors*, 9(1), Jan. 2009, 57-60
5. Florescu I. A summary of recent and old results on the security of the Diffie-Hellman key exchange protocol in finite groups, book chapter in Ed/s S. Lian and Y. Zhang, *Handbook of Research on Secure Multimedia Distribution*, Information Science Reference, New York, March 2009, ISBN: 978-1-60566-262-6, chapter X, p.181-200.
6. Bach, J.R, I. Florescu, I. Wendel, A Christmas celebration for a sexually transmitted fatal condition, *American Journal of Physical Medicine and Rehabilitation*, vol. 87, nr. 12, December 2008, pages 1052-1053.
7. Florescu I. and F. Viens, Stochastic volatility: option pricing using a multinomial recombining tree, *Applied Mathematical Finance*, vol. 15, no. 2, April 2008, 151-181.
8. Stolkin R., I. Florescu, M. Baron, C. Harrier and B. Kocharov: Efficient visual servoing with the ABCshift tracking algorithm, *Proceedings of the 2008 IEEE International Conference on Robotics and Automation*, Pasadena, CA, 19-23 May 2008, p. 3219-3224
9. Stolkin R., I. Florescu: Probabilistic analysis of a passive acoustic diver detection system for optimal sensor placement and extensions to localization and tracking, *Proc. IEEE MTS OCEANS 2007*, Sept. 29 2007 – Oct. 4 2007, p. 1-6.
10. Stolkin R., I. Florescu, G. Kamberov: An adaptive background model for CAMSHIFT tracking with a moving camera, *Advances In Pattern Recognition*, Proceedings of the Sixth International Conference Indian Statistical Institute, Kolkata, India 2-4 January 2007, World Scientific Publishing, p. 147-151.
11. Florescu I. and F. Viens, Sharp estimation for the almost-sure Lyapunov exponent of the Anderson model in continuous space. *Probability Theory and Related Fields*, vol. 135, no. 4, Aug 2006, pages 603-644.
12. Florescu I. and F. Viens, A Binomial Tree Approach to Stochastic Volatility Driven Model of the Stock Price. *Annals of the University of Craiova, Mathematics and Computer Science Series*, vol. 32 (2005), p. 126-142.

Non-refereed publications.

Florescu I. “Pricing using Implied Volatility Surface”, technical report, Purdue University, TR05-02

Florescu I. “Queuing Processes - An introduction with Proposed Applications to Finance”, technical report, Purdue University, TR05-01

“Real-time vision guided robotic systems”, poster presentation at Research and Entrepreneurship day at Stevens, April 30, 2008.

TEACHING EXPERIENCE

Undergraduate Courses:

Probability and Statistics for engineers, Elementary Probability, Statistics for Liberal Arts students, Intermediate Statistics, Differential Equations.

Graduate Courses:

Probability Theory, Stochastic Processes, Mathematical Statistics, Real Analysis, Pricing and Hedging, Computational Methods in Finance, Portfolio Theory and Investments, Time series.

Curriculum Development:

New course content: *Intermediate Statistics*, introduced the use of R statistical software throughout the course, the study of advanced statistical methods such as multivariate regression, diagnostic checks, Two-way ANOVA, ANCOVA and logistic regression.

New course content: *Computational Methods in Finance*, structured the class and introduced advanced topics such as tree processes for approximating continuous time stochastic volatility models, Fast-Fourier transform applied to finance and in particular to the variance gamma process.

New course content: *Stochastic Processes*, introduced the study of Brownian motion and derivatives, and wrote a series of 100 page original lecture notes for the class.

New course: *Time Series*, an entirely new course, studying the classical time series models and the recent heteroschedastic models applied to Finance.

INVITED CONFERENCE TALKS

AMS Special Session on Mathematical Finance, Penn State University, USA, “Stochastic volatility models: Parameter estimation for a reduced model”, Oct. 24-25, 2009

Workshop on Stochastic Analysis, Purdue University, USA, “A study of an integro-differential parabolic problem arising in Mathematics of Finance”, Sep 29 - Oct 1, 2009

Conference on Modeling High Frequency Data in Finance, Hoboken, NJ, USA, “Continuous time Stochastic Volatility models: Applications to High-Frequency Data”, July 10-12, 2009

9^{ème} Colloque Franco-Roumain de Mathématiques Appliquées, Universitatea Transilvania, Brasov, Romania, “A clustering/selection method to capture the systematic movement of equity’s return”, Aug. 28- Sept. 2, 2008.

2007 Fall Western Section Meeting AMS sectional meeting, University of New Mexico, “Stochastic Volatility models: Leverage effect in continuous time”, October 13-14 2007.

Stochastic Processes and their Applications SPA 07(32nd edition), University of Illinois at Urbana-Champaign, “Analyzing discrete time stochastic volatility models”, August 6–10, 2007

Kent-Purdue Mini-symposium on Financial Mathematics (3rd edition), Kent University, “Estimating parameters for Diffusion Equations with a hidden factor”, April 27–28, 2007

American Mathematical Society sectional meeting, Stevens Institute of Technology April 14–15, 2007

Fourth Rutgers Stevens Workshop on Optimization of Stochastic Systems, Stevens Institute of Technology “Statistical methods in cryptography. An application to the Diffie-Hellman exchange protocol”, March 30–31, 2007

2006 International Workshop on Applied Probability, University of Connecticut, USA, “Coefficient Estimation for Stochastic Volatility Models”, May 15–18, 2006

Third Rutgers-Stevens Workshop on Optimization of Stochastic Systems, Rutgers University, USA, “Option Pricing Using Recombining Trees”, Sep 30–Oct 1, 2005

Le 7^e Colloque Franco-Roumain de Mathematique Appliquees, Craiova, Romania, “A Binomial Tree Approach to Stochastic Volatility Driven Model of the Stock Price”, Aug 30–Sep 3, 2004

Summer School in Probability, Saint-Flour, France, “Pricing using Implied Volatility Function”, 2003

Summer School in Mathematics of Finance, Cortona, Italy, “Equilibrium Prices in Incomplete Markets”, 1997

INVITED SEMINAR LECTURES

Worcester Polytechnical Institute, Mathematical Sciences Department Colloquium, *Estimation of parameters present in continuous time Stochastic Volatility models*, May 1 2009

New Mexico State University, Mathematics Seminar, *Stochastic Volatility models: Estimation*, March 2009

CUNY Graduate Center, Applied Mathematics Seminar, *Leverage effect in Stochastic Volatility models. What is it and what are conditions for its appearance?*, October 17, 2008

Stevens Institute, Mathematical Sciences Colloquium, *A Clustering/Selection method to capture the systematic movement of Equity’s Return*, May 6 2008

Rutgers University, Mathematical Finance and Probability Seminars, *A Clustering/Selection method to capture the systematic movement of Equity’s Return*, April 15 2008

CUNY Graduate Center, Algebra and Cryptography Seminar, *Looking at the Diffie-Hellman key exchange protocol from a statistical perspective*, February 29, 2008

University of Cincinnati *Statistical methods in Cryptography. An application of relative entropy and permutation testing to asses the security of the Diffie-Hellman exchange protocol.*, November 6, 2007

Stevens Society of Mathematicians (SSM) *Stochastic Calculus: Application to calculating Leverage effect in Stochastic Volatility models*, September 19, 2007.

Kent University *Option pricing for stochastic volatility models using a highly recombining tree*, April 23, 2007

Bloomberg seminar series, *Option pricing under a stochastic volatility model, using a stochastic, highly recombining tree.*, March 15, 2007

Stevens Institute, *Mini-Lecture Series in Stochastic Integration*, Sep 20 – Oct 20, 2006

Stevens Institute, Computer Science- Security Seminar, *Statistical approach to the Decision Diffie-Hellman Problem*, Oct 2, 2006.

Purdue University, Computational Finance Seminar, *Coefficient Estimation for Diffusion Models*, Apr 28, 2006

Stevens Institute of Technology, Nonlinear Systems Seminar, *Sharp estimation of the almost-sure Lyapunov exponent for the Anderson model in continuous space*, Oct 4, 2005

Stevens Institute of Technology, Stochastic Systems Seminar, *Stochastic Volatility Stock Price - Option Pricing and Coefficient Estimation*, Feb 18 2005

Purdue University, Probability Seminar, *A Lower Bound for the Exponential Behavior of the Solution to the Anderson Stochastic Parabolic Equation*, Jan 18, 2005.

Purdue University, Computational Finance Seminar *A Binomial Tree Approach to Stochastic Volatility Driven Model of the Stock Price*, Apr 23, 2004

Purdue University, Probability Seminar, *Tree Approximation to the Option Price in the Stochastic Volatility World*, Sep 28, 2004

PROFESSIONAL ACTIVITIES AND AFFILIATIONS

Attended Summer School in Probability, *Saint-Flour*, France, 2003

Attended Summer School in Mathematics of Finance, *Cortona*, Italy, 1997

Co-author of the Option Calculator Program "K-Option," <http://koptioncalc.sourceforge.net/>

IMS (Institute of Mathematical Statistics) , Member

ASA (American Statistical Association), Member

OTHER PROFESSIONAL ACTIVITIES

Reviewer of manuscripts for the following Journals:

Annals of Finance, Decisions in Economics and Finance, IEEE Transactions in Pattern Analysis and Machine Intelligence (TPAMI), Mathematical and Computer Modeling, Mathematical Reviews, Quantitative Finance, Physica A, RISK.

Springer (book reviews).

Natural Sciences and Engineering Research Council of Canada (NSERC)

Conference and Seminar Organizer

Special session on "Financial Mathematics" at the Spring 2010 Meeting of the AMS Western Section at University of New Mexico. Co-organizer with Maria Mariani.

Conference on Modeling High Frequency Data in Finance, July 10-12 2009. Principal organizer. Co-organizers Maria Mariani and Khaldoun Khashanah. The conference was one of the largest in the area with 123 participants.

Stevens Institute of Technology *Financial Engineering Seminar*, Spring 2007 -

Stevens Institute of Technology *Stochastics Systems Seminar*, Fall 2005 -

Section Chair, *JSM 2005*, Section on Nonparametric Statistics, Aug 7-11, 2005

OUTREACH AND SERVICE

Member of the academic appeals committee, undergraduate curriculum committee and the library committee at Stevens Institute of Technology.

Submitted an accepted internal proposal and worked with undergraduate students during the summers of 2007, 2008, 2009 as part of the Technogenesis project at Stevens Institute of Technology.

Webmaster for the Mathematical Sciences Department, the Financial Engineering program and the Stochastic Systems program at Stevens Institute of Technology.

STUDENTS AND STUDENTS ADVISING

Ph.D. major advisor: Dragoş Bozdog (anticipated 2011), Forrest Levin (anticipated 2010), Darryl Neil Penenberg (anticipated 2010), Thomas Lonon

Undergraduate students working on senior design project: Morgan Baron, Kirk Deligiannis, Colin Harrier, Matt Hochberger working on "Design of a Vision Guided Robotic Vehicle", AY 2007-2008, co-advising with G. Kamberov and R. Stolkin. (won the award for the best senior design project at Stevens 2008)

Graduate committee member: Ludmyla Reveda (Ph.D. 2005), Thomas Surowiec (Masters' 2006), Gregory Stock (Masters' 2007).