ROLANDO D. NAVARRO, JR., Ph.D.

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EDUCATION

- Ph.D. Statistics, Purdue University, West Lafayette, IN, 2011-2015
  GPA: 3.91/4.00   Degree Awarded: 19 December 2015
  Ph.D. Dissertation: *Malliavin Calculus in the Canonical Lévy Process: White Noise Theory and Financial Applications.*
  Adviser: Frederi G. Viens, Ph.D.

- Certificate of Applied Management Principles (mini-MBA),
  Purdue University, West Lafayette, IN 2014

- M.S. Statistics, University of the Philippines - Diliman, 2004-2008
  Master's Thesis: *Estimating the Gauss-Markov Random Field Parameters for Remote Sensing Image Textures.*
  Adviser: Joselito C. Magadia, Ph.D., Enrico C. Paringit, D.Eng.

- B.S. Electrical Engineering., University of the Philippines,
  Los Baños, 1996-2001
  Undergraduate Thesis: *Recognition of Tagalog Alphabets Using the Hidden Markov Model*, Adviser: Haidee P. Rosete

PROFESSIONAL EXPERIENCE

- *Quantitative Analyst* (Apr 2016 - present)
  The Options Clearing Corporation, Chicago, IL, USA
  Engaged and collaborated with the QRM team in development of methodologies for stress testing and energy futures for clearing fund calculations which include:

  - modeling returns series using copula, asymmetric GARCH framework, and long-tailed innovation processes,
  - implied volatility surface modeling,

- *Graduate Teaching Assistant* (Aug 2011 - Dec 2015)
  Department of Statistics, Purdue University, West Lafayette, IN, USA

  - Mentored in laboratory sessions Elementary Statistics using SPSS;
  - Graduate-level teaching assistant in Mathematical Finance, Time Series, Measure-Theoretic Probability, and Stochastic Processes.

- *Risk Analyst, Group Model Validation* (May 2010 - Jun 2011)
  Standard Chartered Bank, Marina Bay Financial Centre, Singapore

  - Collaborated with Head of Methodology to improve PD and LGD estimation using Survival Analysis and Kalman Filtering.

- – Identified modeling and code development issues in SAS; formulated solutions for consumer banking models for Basel II.

- *Data Analytics Engineer* (May 2008 to Apr 2010)
  Vision Analytics, Inc. (formerly Vinta Systems, Inc.), Makati City, Philippines

  - – Analyzed the performance of machine learning algorithms, such as Support Vector Machines and Neural Networks for application and behavioral credit scoring.
  - – Recommended statistical analysis tools to develop credit scorecard for RCBC Savings Bank.

- *Design Engineer* (Jan 2003 to Apr 2008)
  Luxembourg Electronics, Inc., Makati City, Philippines

  - – Responsible for the testing and installation of single and multimode fiber optic systems on a family-run business.

- *Science Research Specialist*, DSP Team (Apr 2002 to Dec 2002)
  Advanced Science and Technology Institute, Department of Science and Technology, Quezon City, Philippines

  - – Investigated the performance and stability of timing synchronization of $\pi/4$-DQPSK modulation for baseband modem design

RESEARCH INTERESTS

Algorithmic Trading	Mathematical Finance
Lévy Processes	Quantitative Risk Management
Long Memory Dependence	Signal Processing
Machine Learning	Stochastic Analysis
Malliavin Calculus	Stochastic Optimal Control
Market Risk	Stochastic Volatility

SKILLS

- Computing: C/C++ (with certification from Baruch College MFE Program), Python, Unix, Matlab, SQL, Excel-VBA, SPSS, SAS, R, Mathematica, LaTeX, Algorithmic Trading.

- Finance: Options and Fixed Income, Market and Credit Risk, Portfolio Optimization, Macroeconomics, Market Microstructure, Statistical Arbitrage.

- Mathematics: Stochastic Calculus, Numerical Analysis, Optimization, Linear Algebra, PDE, Stochastic Optimal Control.

- Statistics: Machine Learning, Bayesian Analysis, Time Series, Signal Processing, Multivariate Analysis, Mathematical Statistics, Monte Carlo Simulation,.

TEACHING EXPERIENCE

- Laboratory Instructor at the Undergraduate Level
    - STAT 301 - Elementary Statistics (Regular and Honors)

- Teaching Assistant to the following Graduate Level Courses
    - MA 515/STAT 540 - Mathematics of Finance
    - MA 516/STAT 541 - Adv. Prob. & Options, w/ Numerical Methods
    - MA 539/STAT 539 - Theory of Probability II
    - STAT 520 - Time Series and Applications
    - STAT 532 - Elementary Stochastic Processes

NOTABLE ACHIEVEMENTS

- Frederick Andrews Fellowship, Purdue University, 2011-2015.

- Best M.S. Statistics Thesis, Philippine Council for Advanced Science and Technology Research and Development, 2008.

- MS Thesis Fellowship Grant, Statistical Research and Training Center (Philippines), 2007.

- Rank 13th Philippine Registered Electrical Engineering Board Licensure Examination (REE License Number 28215), 2001.

- Philippine delegate to the 36th International Mathematical Olympiad, York University, Toronto, Canada, 1995.

- 2nd Place - Philippine Mathematical Olympiad, National Level, 1995.

JOURNAL PUBLICATIONS

- R. Navarro and F. Viens. White Noise Analysis in the Canonical Lévy Process, *Communications in Stochastic Analysis*, 9(4):553-577, 2015.

- R. Navarro and F. Viens. Clark Ocone Theorem in the Canonical Lévy Process and Applications to Quadratic Hedging, *(under preparation)*.

- R. Navarro, R. Tamangan, N. Natan-Guba, E. Ramos, and A. de Guzman. Identification of the Long Memory Process in the ASEAN-4 Stock Markets by Fractional and Multifractional Brownian Motion, *Philippine Statistician,* 55(2):65-83, 2006.

BOOK CHAPTER WRITING

- R. Navarro, J. Magadia, and E. Paringit. Estimation of the Separable MGMRF Parameters for Thematic Classification. In *Remote Sensing - Advanced Techniques and Platforms,* B. Escalante (ed.), 2012.

CONFERENCE PRESENTATIONS

- R. Navarro. and F. Viens Clark-Ocone Theorem Under Change of Measure in the Canonical Lévy Space, with Applications to Mean Variance Hedging in Stochastic Volatility Models, 9th Bachelier Finance Society World Congress, New York (paper accepted for presentation in July, 2016).

- R. Navarro. White Noise Analysis in the Canonical Levy Process , Probability Seminar, Purdue University, 2015.

- R. Navarro. Canonical Levy Process in Finance Using White Noise Analysis, Computational Finance Seminar, Purdue University, 2015.

- R. Navarro. *Mean-Variance Hedging with Partial Information Using the Clark-Ocone Representation with the Change of Measure for Lévy Process,* Barcelona GSE Summer Forum: Statistics, Jump Processes and Malliavin Calculus, 2014.

- R. Navarro, J. Magadia, and E. Paringit. *Estimating the Gauss-Markov Random Field Parameters for Remote Sensing Image Textures,* IEEE TENCON 2009, Singapore, 2009.

- R. Navarro. *Recognition of Tagalog Alphabets Using The Hidden Markov Model,* 10th National Convention on Statistics, Manila, 2007.

- R. Navarro and J. R. Albert. *A Compound Gauss-Markov Random Field Modeling of Philippine Unemployment Data,* Physics Society of the Philippines National Congress, Ateneo de Davao University, 2006.

- R. Navarro and J. Noche. *Classification of Mixtures of Student Grade Distribution Based on the Gaussian Mixture Model Using the Expectation-Maximization Algorithm,* 4th National ECE Conference, University of San Carlos, Cebu City, Philippines, 2003.

- R. Navarro, C. G. Santos, and A. Manlapat.*Performance Analysis of Gardner Timing Error Detector Over $\pi/4$-DQPSK Modulation,* 3rd National ECE Conference, University of the Philippines, Diliman, Quezon City, Philippines, 2002.

PEER REVIEW ACTIVITIES

- Referee - The IET Signal Processing (since 2010)
  More than 10 peer-reviewed articles on different areas of signal processing and machine learning.

PARTICIPATION ON CONFERENCES

- 2016 Conference on Market Microstucture and High Frequency Data, University of Chicago, May 2016.

- AMS Joint Mathematical Meetings, Seattle, WA, Jan. 2016 (with USD 800 travel grant from AMS).

- AMS Mathematics Research Communities, Financial Mathematics, Snowbird, UT, Jun 2015 (with travel grant of USD 700 and lodging from AMS).

- SIAM Conference on Financial Mathematics and Engineering, Chicago, IL, Nov 2014.

- Barcelona Graduate School of Economics Summer Forum: Statistics, Jump Processes and Malliavin Calculus, Pompeu Fabra University, Barcelona, Spain, Jun 2014 (with USD 500 travel grant from Purdue Dept. of Statistics).

- High Frequency Conference, Stevens Institute of Technology, (Hoboken, NJ, Jul 2012, Oct 2013, Oct 2015).

- ASA Joint Statistical Meetings Diversity Workshop, San Diego, CA, Jul 2012, (with USD 500 travel grant from ASA).

- R Finance Conference, University of Illinois, Chicago, May 2012.

LIFETIME MEMBERSHIPS OF HONOR SOCIETIES

- Golden Key International Honour Society (since March 2013)

- Phi Kappa Phi International Honor Society (since April 2007)

PROFESSIONAL AFFILIATION

- American Mathematical Society

- American Statistical Association

- Society of Industrial and Applied Mathematics

LEADERSHIP ACTIVITIES

- Student Team Leader, 2015 Rotman International Trading Competition, Toronto, Canada, Feb 2015

  - Spearheaded 2-month training of a 6-member Purdue trading team in futures, commodities, and algorithmic trading events.
  - Co-developed mean reverting statistical arbitrage using the technique of Avellaneda and Lee to create trading signals.

- President, Purdue Quantitative Finance Club (PQFC),
  Feb 2014 to May 2015

  – Revitalized student interest on Quantitative Finance by reaching out
    to its members, alumnus, and headhunters
  – Initiated members on conducting introductory seminars in
    quantitative finance
  – Spearheaded educational tours to Chicago Board of Trade, and
    initiated the creation of trading research group.

- Senator, Purdue Graduate Student Government,
  Jun 2013 - May 2014

  – Collaborated with the student government in representing the Dept.
    of Statistics in the decision making on issues concerning the well
    being of graduate students in Purdue.

- Founding President, UPLB Society of Electrical Engineering Students,
  Jun 1997 - Nov 1998

  – Initiated student organization on the newly offered course BS
    Electrical Engineering
  – Successfully invited industry participation for an industry talk and
    exhibit on its first year anniversary.

May, 2016