Curriculum Vitae
James D. Lynch

Summer 2014

PROFESSIONAL EXPERIENCE

Teaching assistant, Mathematics, Spring 1970, Marquette University
Biometry trainee, 1970-1972 and 1973-1974, Florida State University
Teaching assistant, Statistics, Fall 1972 and Summer 1973, Florida State University
Research assistant, 1972-1973, Florida State University
Assistant Professor, 1974-1976, University of Nebraska
Assistant Professor, 1976-1984, Pennsylvania State University
Visiting Associate Professor, 1981-1982, University of South Carolina
Visiting Associate Professor, 1982-1983, Florida State University
Associate Professor, 1984-1985, Pennsylvania State University
Associate Professor, 1985-89, University of South Carolina
Professor, 1989-present, University of South Carolina
Director, Center for Reliability and Quality Sciences, 1990-2005
Chair, 2001-2005
Distinguished Professor Emeritus, January 2009 to present
Research Professor, January 2009 to present
Sabbatical, University of Tennessee, Knoxville, TN, Spring 1992
Sabbatical, NISS, Fall 1998
Sabbatical, SAMSI/NISS, Spring 2006
Spring 2009, SAMSI Fellow
Fall 2010, SAMSI Fellow

DOCTORAL DEGREE

Dissertation Topic: "Contributions to rates of convergence with applications to efficiencies of tests and estimates"
Major Professor: J. Sethuraman
Date of Completion: December 1974

AREAS OF RESEARCH

- Probability, Applied Probability, Stochastic Processes, Reliability, Industrial Problems.
- Currently have interests in complex systems, reliability and industrial problems.

PERSONAL STATEMENT

- I suckered someone into paying me for doing my hobby.

SOME RESEARCH PAPERS

- J. Grego, S. Li, J. Lynch and J. Sethuraman (2014), "Partition Based Priors and Multiple Event Censoring: An Analysis of Rosen's Fibrous Composite Experiment," *Technometrics*, 56, 359-371.
[Title tells it all.]
- Zou, J., Karr, A. F., Datta, G., Lynch, J. and Grannis, S. (2014), "A Bayesian Spatio-Temporal Approach for Real-Time Detection of Disease Outbreaks: A Case Study," *BMC Medical Informatics and Decision Making*, Accepted.
[This is the most recent of a series of papers by these authors (with others) on a syndormic surveillance methodology.]
- S. Li and J. Lynch (2011), "On a Threshold Representation for Complex Load-Sharing Systems," *Journal of Statistical Planning and Inference*, 141, 2811-2823.
[Among other things, gives an explicit representation for Durham and Lynch (2000) for the mixture distribution in the representation in terms of convolutions of uniforms.]
- S. Li and J. Lynch (2010), "Some Elementary Ideas Concerning the Complexity of System Structure," *NRL*, 57, 626-633.
[Title tells it all.]
- F. Vera, D. Dickey and J. Lynch (2010), "Asymptotic distribution theory for contamination models," Unpublished Draft.
[Studies the asymptotic distribution theory of the 2-point mixture model, background versus signal. The asymptotics are particularly diabolic when p, the probability of the signal, goes to zero. This is related to the so-called looking for a needle in a haystack problem. In this case, the asymptotic distribution of the LMP test/MLE has a mixed distribution (the Chernoff phenomena) where, surprisingly, the test statistic can have an asymptotic distribution that is based on a stable law that is not the normal distribution. (This may be enough to make one become a Bayesian regarding the analysis of contamination models.) A draft, with some corrections, of this paper is on my webpage.]
- F. Vera and J. Lynch (2007), "General Convex Stochastic Orderings and Related Martingale-Type Structures," *Advances in Applied Probability*, 39, 105-127.
[Extends Blackwell's dilation/one step-martingale ideas regarding comparison of experiments having the same first moment to experiments where the first 2k-1 moments are equal.]
- J. Gleaton and J. Lynch. (2006), "Properties of Generalized Log-Logistic Families of Lifetime Distribution," *Journal of Probability and Statistical Science*, 4, 51-64.
[This is related to Gleaton and Lynch (2002), below.]
- J. Grego and J. Lynch (2006), "Some Mixed Gamma Representations," *Journal of Applied Probability and Statistics*, 1, 31-37.
[Here totally parametric mixture representations are given for exponential order statistics and for the sample variance from normals.]
- F. Vera and J. Lynch (2005), "K-mart Stochastic Modeling using Iterated Total Time on Test Transforms," *Modern Statistical and Mathematical Methods in Reliability*, Wilson et al. Editors, *Series on Quality, Reliability and Engineering Statistics*, Volume 10 World Scientific, NY, 395-409.
[Related to the first paper above.]
- J. U. Gleaton and J. D. Lynch (2002), "On the distribution of the Breaking Strain of a Bundle of Brittle Elastic Fibers," *Advances of Applied Probability*, 36, 98-115.
[Uses thermodynamic - max entropy/information theoretic concepts in a fracture setting.]
- S. D. Durham and J. D. Lynch (2000), "A Threshold Representation for the Strength Distribution of a Complex Load Sharing System," *Journal of Statistical Planning and Inference*, 83, 25-46.
[Shows that a complex systems of Weibulls has a mixed distribution representation for the system strength.]
- J. D. Lynch (2000), "The Galton-Watson Process Revisited: Some Martingale Relationships and Applications," *Journal of Applied Probability*, 37, 1-7.
[Shows that the irregularity of the GW Process is equivalent to the closability of a related martingale

sequence.]

- J. D. Lynch and J. Sethuraman (1999), "On the ergodicity of General State Markov Chains," Unpublished Draft.

[Relates L1-convergence of a reverse martingale to the variational norm convergence of the chain distribution to its equilibrium distribution. A draft of this paper is on my webpage.]

- J. D. Lynch and J. Sethuraman (1989), "A Functional Erdos-Renyi Law of Large Numbers" Unpublished Draft.

[This is an analog of Strassen's functional LIL where the unit L2 ball is the set of cluster points in the functional LIL. Here, though, the functional ER law is not an invariance principal since the ball of cluster points in the ER-law depends on the large deviation rate function for the iid random variables in the ER moving averages. A draft of this paper is on my webpage.]

ONGOING RESEARCH

- Structural reliability models.
- Balayages and Martingale-type Structures.
- Gibbs measure/Markov random field representations and threshold/mixed distributions to model the failure of complex systems under loads.

Updated on October 31, 2014