Vincent Lyzinski

Human Language Technology Center of Excellence, 810 Wyman Park Drive, Baltimore, MD 21211
Dept. of Applied Mathematics and Statistics, The Johns Hopkins University
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RESEARCH INTERESTS: mathematical statistics, network inference, dimensionality reduction, high-dimensional data analysis, big data

EDUCATION:

2007 – *2013*	***The Johns Hopkins University*** PhD in Applied Mathematics and Statistics *Adviser:* Prof. James Allen Fill *Dissertation title:* Intertwinings, Interlacing Eigenvalues, and Strong Stationary Duality for Diffusions.	Baltimore, MD
2007 – *2011*	***The Johns Hopkins University*** M.S.E. in Applied Mathematics and Statistics	Baltimore, MD
2006 – *2007*	***The Johns Hopkins University*** M.S. in Mathematics	Baltimore, MD
2002 – *2006*	***University of Notre Dame*** B.S. in Mathematics Graduated magna cum laude	Notre Dame, IN

PROFESSIONAL & ACADEMIC EXPERIENCE:

Aug. 2014 – Present	The Johns Hopkins University, Baltimore, MD Senior Research Scientist, Human Language Technology Center of Excellence Assistant Research Professor, Department of Applied Mathematics and Statistics
Jan. 2013 – Aug. 2014	The Johns Hopkins University, Baltimore, MD Postdoctoral Fellow, Department of Applied Mathematics and Statistics

JOURNAL ARTICLES & OTHER PUBLICATIONS:

V. Lyzinski, G. Sell, A. Jansen. "An evaluation of graph clustering methods for unsupervised term discovery." *Interspeech,* To appear (2015).

V. Lyzinski, D. E. Fishkind, M. Fiori, J. T. Vogelstein, C. E. Priebe and G. Sapiro. "Graph matching: Relax at your own risk." *IEEE Transactions on Pattern Analysis and Machine Intelligence,* In press (2015).

J. A. Fill and **V. Lyzinski**. "Strong stationary duality for diffusion processes." *Journal of Theoretical Probability,* In press (2015).

D. E. Fishkind, **V. Lyzinski**, H. Pao, L. Chen and C. E. Priebe. "Vertex nomination schemes for membership prediction." *Annals of Applied Statistics,* In press (2015).

V. Lyzinski, D. Sussman, D. E. Fishkind, H. Pao and C. E. Priebe. "Spectral clustering for divide-and-conquer graph matching." *Parallel Computing,* In Press (2015).

Athreya, **V. Lyzinski**, D. Marchette, C. E. Priebe, D. Sussman and M. Tang. "A limit theorem for scaled eigenvectors of random dot

product graphs." *Sankhya A*, In Press (2015).

Godbole, S. Gutekunst, **V. Lyzinski** and Y. Zhuang. "Logarithmic representability of integers as k-sums." *Integers: The Electronic Journal of Combinatorial Number Theory*, In press (2015).

J. T. Vogelstein, J. M. Conroy, **V. Lyzinski**, L. J. Podrazik, S. G. Kratzer, E. T. Harley, D. E. Fishkind, R. J. Vogelstein, C. E. Priebe. "Fast approximate quadratic programming for graph matching." *PLoS ONE,* 10(4) (2014).

V. Lyzinski, D. Sussman, M. Tang, A. Athreya and C. E. Priebe. "Perfect clustering for stochastic block model graphs via adjacency spectral embedding." *Electronic Journal of Statistics*, 8, pp. 2905-2922 (2014).

V. Lyzinski, D. E. Fishkind and C. E. Priebe. "Seeded graph matching for correlated Erdos-Renyi graphs." *Journal of Machine Learning Research*, 15, pp. 3513-3540 (2014).

J. A. Fill and **V. Lyzinski**. "Hitting times and interlacing eigenvalues: A stochastic approach using intertwinings." *Journal of Theoretical Probability,* 27(3), pp. 954-981 (2014).

Godbole, C. M. Lim, **V. Lyzinski** and N. Triantafillou. "Sharp threshold asymptotics for the emergence of additive bases." *Integers: The Electronic Journal of Combinatorial Number Theory*, 13 (2013).

ARTICLES UNDER REVIEW:

V. Lyzinski, M. Tang, A. Athreya, Y. Park and C. E. Priebe: Community detection and classification in hierarchical stochastic blockmodels. arXiv 1503.02115 (2015).

V. Lyzinski, Y. Park, C. E. Priebe and Michael Trosset: Fast embedding for JOFC using the raw stress criterion. arXiv 1502.03391 (2015).

M. Tang, A. Athreya, D. L. Sussman, **V. Lyzinski** and C. E. Priebe: A nonparametric two-sample hypothesis testing problem for random dot product graphs. arXiv 1409.2344 (2015).

M. Tang, A. Athreya, D. L. Sussman, **V. Lyzinski** and C. E. Priebe: A semiparametric two-sample hypothesis testing problem for random dot product graphs. arXiv 1403.7249 (2015).

V. Lyzinski, S. Adali, J. T. Vogelstein, Y. Park and C. E. Priebe: Seeded graph matching via joint optimization of fidelity and commensurability. arXiv 1401.3813 (2014).

HONORS & AWARDS:

2009- 2012	GAANN Fellowship**,** U.S. Department of Education
2008- 2012	Counselman Endowed Fellowship The Johns Hopkins University Department of Applied Mathematics and Statistics
2007- 2009	Naddor Endowed Teaching Fellowship The Johns Hopkins University Department of Applied Mathematics and Statistics

CONFERENCE PRESENTATION AND INVITED SEMINARS:

" The Cortical Column Conjecture and related connectomic problems," Invited speaker: Guest lecturer in "Statistical Learning from Omics Data" course at SAMSI. April, 2015.

"Spectral Clustering for Divide-and-Conquer Graph Matching," Invited speaker: Virginia Commonwealth University Special VCU Statistics & Discrete Mathematics Seminar. February, 2015.

“(Robust) Seeded Graph Matching,” Regular contributed paper presenter: 2014 Joint Statistics Meetings. August, 2014.

“Brain Graphs: Batch Effects and Clustering." DARPA GRAPHS PI meeting/workshop. July, 2014.

“Seeded Graph Matching,” Speaker: 14th Haifa Workshop on Graph Theory, Combinatorics, and Algorithms. June, 2014.

“Seeded Graph Matching and Applications,” Invited seminar speaker: George Mason University SPACS/CCDS/Statistics Colloquium Series. March, 2013.

“Seeded Graph Matching,” Invited speaker: Johns Hopkins HLTCOE invited seminar. February, 2013.

“Seeded Graph Matching,” Invited seminar speaker: George Mason University Department of Statistics Seminar. January, 2013.

“Large Graph Matching with Applications to Brain Networks,” Invited speaker. Duke University IID, October, 2013.

“Strong Stationary Duality for Diffusion Processes,” Invited speaker: INFORMS applied probability conference, San Jose, Costa Rica, July, 2013.

“Seeded Graph Matching,” Johns Hopkins University Department of Applied Mathematics and Statistics Student Seminar Series, February, 2013.

“Recent Advances in Seeded Graph Matching,” JHU-HLTCOE quarterly technical review, October, 2012.

“Strong Stationary Duality for Diffusion Processes,” Invited speaker: Session on Computational and Discrete Mathematics, CAIMS, Toronto, CA, June 2012.

“Sharp Threshold Asymptotics for the Emergence of Additive Bases,” AMS Session on Probability Theory, Stochastic Processes and Statistics, AMS/MAA Joint Mathematics Meeting, Boston, MA, January 4, 2012.

“Sharp Threshold Asymptotics for the Emergence of Additive Bases,” Johns Hopkins University Department of Applied Mathematics and Statistics Student Seminar Series, October 18, 2011.

“Multivariate Records,” George Washington University Department of Statistics Student Seminar Series, October 15, 2010.

“Multivariate Records,” Johns Hopkins University Department of Applied Mathematics and Statistics Student Seminar Series, October 12, 2010.

“A Stochastic Interpretation of a Hitting Time Result of Mark Brown,” Johns Hopkins University Department of Applied Mathematics and Statistics Student Seminar Series, April 13, 2010.

“The Comparison Method for the Relaxation Time of Ergodic Markov Chains,” Fields-MITACS Summer School in Applied Probability, May 2009.

“The Comparison Method for the Relaxation Time of Ergodic Markov Chains,” Johns Hopkins University Department of Applied Mathematics and Statistics Student Seminar Series, March 24, 2009.

TEACHING HISTORY:

Instructor, Department of Applied Mathematics and Statistics, Johns Hopkins University

Developed a syllabus and overall course structure; designed and implemented a course curriculum; created exams and homework and administered all grades.

Courses taught:

- 550.620 Probability Theory I; fall, 2015.
- 550.771 The Probabilistic Method; spring, 2014
- 550.310 Probability and Statistics for the Physical and Information Sciences and Engineering; fall, 2013

- 550.111 Statistical Analysis I; spring, 2013
- 550.310 Probability and Statistics for the Physical and Information Sciences and Engineering; fall, 2012
- 550.230 Introduction to Biostatistics; summer, 2012
- 550.310 Probability and Statistics for the Physical and Information Sciences and Engineering; fall, 2011
- 550.230 Introduction to Biostatistics; summer, 2011
- 550.310 Probability and Statistics for the Physical and Information Sciences and Engineering; spring, 2011
- 550.310 Probability and Statistics for the Physical and Information Sciences and Engineering; spring, 2010
- 550.171 Discrete Mathematics; summer, 2009 550.111 Statistical Analysis I; summer, 2008

Teaching Assistant, Johns Hopkins University

Collaborated with faculty on curriculum development; independently developed and taught weekly section lectures and review sessions; graded homework and exams; individualized teaching plans for students as needed.

Courses TA'd in Applied Mathematics and Statistics:

- 550.621 Probability Theory II for Professor James Fill
- 550.362 Introduction to Optimization II for Professor Donniell Fishkind
- 550.692 Matrix Analysis and Linear Algebra for Professor Donniell Fishkind
- 550.385 Scientific Computing: Linear Algebra for Professor Youngmi Hur
- 550.111 Statistical Analysis I for Professor Nam Lee
- 550.361 Introduction to Optimization for Professor Beryl Castello
- 550.386 Scientific Computing: Differential Equations for Professor Greg Eyink
- 550.291 Linear Algebra and Differential Equations for Professor Fred Torcaso

Courses TA'd in Mathematics:

- 110.202 Calculus III for Professor Graeme Wilkin
- 110.109 Calculus II for Professor Julien Paupert

PROFESSIONAL ACTIVITIES AND SOCIETIES:

Session Organizer, ISNPS annual conference, 2015.

Refereed papers for the following journals: *Annals of Probability, IEEE TNNLS, Annals of Applied Probability, Electronic Journal of Probability, Involve-A Mathematics Journal, PEIS*

Member: ASA, Phi Beta Kappa