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Education

'03–'09 **PhD in Statistics**
University of Washington, Seattle, WA, USA
Thesis: Statistical Models for Social Network Data and Processes
Advisor: Mark S. Handcock

'03–'06 **MS in Statistics**
University of Washington, Seattle, WA, USA
Advisors: Adrian E. Raftery and Mark S. Handcock

'99–'03 **BS in Biometry and Statistics, Cum Laude with Distinction in Research**
Cornell University, Ithaca, NY, USA
Thesis: The Effect of Integration Cell Size and *In Situ* Target Strength Calculation Method on Acoustic Fish Density Estimates for Alewife Lakes of New York State
Advisors: Steven J. Schwager and Lars G. Rudstam

Positions

7/'13– **Lecturer (Assistant Professor) in Statistics** at *University of Wollongong School of Mathematics and Applied Statistics and National Institute for Applied Statistics Research (NIASRA)*, Wollongong, NSW, Australia

9/'11–6/'13 **Research Associate** at *Pennsylvania State University Department of Statistics*, University Park, PA, USA
Topic: Modeling of social networks; statistical computing
Principal Investigator: David R. Hunter

9/'09–8/'11 **Visiting Research Scientist** at *Carnegie Mellon University iLab at Heinz College and Department of Statistics; and Instituto Superior Técnico Institute for Systems and Robotics*, Pittsburgh, PA, USA; and Lisbon, Portugal
Topic: Modeling of social networks, particularly dynamic networks and telecommunications networks; analysis of mobile phone network data
Principal Investigator: Pedro M. A. Ferreira

Publications

Under Review

Investigating Foreign Portfolio Investment Holdings: Gravity Model with Social Network Analysis (Luke Mazur, Thomas Suesse, and Pavel N. Krivitsky). September 2015. http://niasra.uow.edu.au/workingpapers/UOW205811.html

Peer-Reviewed

Journal

Exponential-Family Random Graph Models for Rank-Order Relational Data (Pavel N. Krivitsky and Carter T. Butts). *Sociological Methodology*, To appear, 2017. http://arxiv.org/abs/1210.0493

Inference for Social Network Models from Egocentrically-Sampled Data, with Application to Understanding Persistent Racial Disparities in HIV Prevalence in the US (Pavel N. Krivitsky and Martina Morris). *Annals of Applied Statistics*, 11(1):427–455, 2017. doi:http://dx.doi.org/10.1214/16-AOAS1010

Using Contrastive Divergence to Seed Monte Carlo MLE for Exponential-Family Random Graph Models (Pavel N. Krivitsky). *Computational Statistics and Data Analysis*, 107:149–161, March 2017. doi:10.1016/j.csda.2016.10.015

Sharing Social Network Data: Differentially Private Estimation of Exponential-Family Random Graph Models (Vishesh Karwa, Pavel N. Krivitsky, and Aleksandra B. Slavković). *Journal of the Royal Statistical Society, Series C*, 66(3):481–500, 2017. doi:10.1111/rssc.12185

Capturing Multivariate Spatial Dependence: Model, Estimate, and then Predict (Discussion Paper) (Noel Cressie, Sandy Burden, Walter Davis, Pavel N. Krivitsky, Payam Mokhtarian, Thomas Suesse, and Andrew Zammit-Mangion). *Statistical Science*, 30(2):170–175, May 2015. doi:10.1214/15-STS517

On the Question of Effective Sample Size in Network Modeling: An Asymptotic Inquiry (Pavel N. Krivitsky and Eric D. Kolaczyk). *Statistical Science*, 30(2):184–198, May 2015. doi:10.1214/14-STS502

An Approximation Method for Improving Dynamic Network Model Fitting (Nicole Bohme Carnegie, Pavel N. Krivitsky, David R. Hunter, and Steven M. Goodreau). *Journal of Computational and Graphical Statistics*, 24(2):502–519, 2015. doi:10.1080/10618600.2014.903087

A Separable Model for Dynamic Networks (Pavel N. Krivitsky and Mark S. Handcock). *Journal of the Royal Statistical Society, Series B*, 76(1):29–46, January 2014. doi:10.1111/rssb.12014

Computational Statistical Methods for Social Network Models (Invited Paper) (David R. Hunter, Pavel N. Krivitsky, and Michael Schwein-

berger). *Journal of Computational and Graphical Statistics*, 21(4):856–882, 2012. doi:10.1080/10618600.2012.732921

Exponential-Family Random Graph Models for Valued Networks (Pavel N. Krivitsky). *Electronic Journal of Statistics*, 6:1100–1128, June 2012. doi:10.1214/12-EJS696

Adjusting for Network Size and Composition Effects in Exponential-Family Random Graph Models (Pavel N. Krivitsky, Mark S. Handcock, and Martina Morris). *Statistical Methodology*, 8(4):319–339, July 2011. doi:10.1016/j.stamet.2011.01.005

Representing Degree Distributions, Clustering, and Homophily in Social Networks with Latent Cluster Random Effects Models (Pavel N. Krivitsky, Mark S. Handcock, Adrian E. Raftery, and Peter D. Hoff). *Social Networks*, 31(3):204–213, July 2009. doi:10.1016/j.socnet.2009.04.001

Fitting Position Latent Cluster Models for Social Networks with `latentnet` (Pavel N. Krivitsky and Mark S. Handcock). *Journal of Statistical Software*, 24(5):1–23, May 2008. http://www.jstatsoft.org/v24/i05

Proceedings **Differentially Private Exponential Random Graphs** (Vishesh Karwa, Aleksandra Slavković, and Pavel N. Krivitsky). *Privacy in Statistical Databases: Lecture Notes in Computer Science* (J. Domingo-Ferrer (ed.)), 8744:143–155, 2014. doi:10.1007/978-3-319-11257-2_12

Network Neighbor Effects on Customer Churn in Cell Phone Networks (Pavel N. Krivitsky, Pedro M. A. Ferreira, and Rahul Telang). *Proceedings of the 7th Symposium on Statistical Challenges in E-Commerce Research (SCECR 2011)*, 2011. http://ro.uow.edu.au/eispapers/4505/

Estimating the Integrated Likelihood via Posterior Simulation Using the Harmonic Mean Identity (Adrian E. Raftery, Michael A. Newton, Jaya M. Satagopan, and Pavel N. Krivitsky). *Bayesian Statistics 8: Proceedings of the Eighth Valencia International Meeting* (J. M. Bernardo, M.J. Bayarri, J. O. Berger, A. P. Dawid, D. Heckerman, A. F. M. Smith, and M. West (eds.)), 8:371–416, 2007. http://www.bepress.com/mskccbiostat/paper6

Other **Modeling of Dynamic Networks based on Egocentric Data with Durational Information** (Pavel N. Krivitsky). *Pennsylvania State University Department of Statistics Technical Report*, TR12-01, April 2012. http://stat.psu.edu/research/technical-reports/copy2_of_2012-technical-reports

Modeling Tie Duration in ERGM-Based Dynamic Network Models (Pavel N. Krivitsky). *Pennsylvania State University Department of Statistics Technical Report*, TR12-02, April 2012. http://stat.psu.edu/research/technical-reports/copy2_of_2012-technical-reports

Teaching

Recent Course Instruction

Au '16 INFO 411/911: **Data Mining**

Au '14–'16 STAT 902: **Advanced Data Analysis**

Sp '13–'16 STAT 251: **Introduction to Biostatistics**

Sp '14 STAT 903: **Survey Design and Analysis**

Au '14–'15 STAT 131: **Understanding Variation and Uncertainty**

Au '14 MATH 131: **Mathematics for Primary School Teachers**

Workshops and Tutorials

'09–'16 **Exponential-family Random Graph (ERG or p*) Modeling with `statnet`; Extending ERGM Functionality within `statnet`: Building Custom User Terms; STERGM — Separable Temporal ERGMs for modeling discrete relational dynamics with `statnet`; Latent variable network modeling with `latentnet`; Introduction to Egocentric Network Analysis with ERGMs in `statnet`; and/or Valued Network Modeling with `statnet`** with Martina Morris, Mark S. Handcock, Steven M. Goodreau, Skye Bender-deMoll, Carter T. Butts, David R. Hunter, and others

4–5/2/'16 **Social Network Analysis with `statnet`** with Martina Morris

Supervision

PhD

'17– **Rajib Dutta** (primary, with Thomas Suesse and Noel Cressie)

Mohamed Hason (co-supervisor, with Yan-Xia Lin primary)

'16– **Victoria Leaver** (co-supervisor, with Robert Clark primary)

MS

'15– **Georgina Davies** (co-supervisor, with Noel Cressie primary)

Honours

'15 **Luke Mazur** (equal co-supervisor, with Thomas Suesse)

Grants

'11–'16 **Co-Investigator** on *NIH Grant R01HD68395 (PSU Subcontract)*
Topic: "Statistical Methods for Network Epidemiology"
Principal Investigator: Martina Morris
Subcontract Principal Investigator: David R. Hunter

Awards and Honors

5/'08 **University of Washington Center for Statistics and Social Sciences**, Seattle, WA, USA
Travel Grant to go to the 2008 Joint Statistical Meeting

12/'07 **NSF Vertical Integration of Research and Education in the Mathematical Sciences (VIGRE) Program**, Seattle, WA, USA
Travel Award to present at the 2007 NIPS Conference Workshops

6/'07 **NSF Vertical Integration of Research and Education in the Mathematical Sciences (VIGRE) Program**, Seattle, WA, USA
Travel Award to present at the 2007 Joint Statistical Meeting

Presentations

Invited

17/12/'16 **Inference for Exponential-Family Random Graph Models and Their Dynamic Extensions from Egocentrically-Sampled Data** with Martina Morris and others. Invited paper at *Isaac Newton Institute Workshop on Dynamic Networks*, Cambridge, UK

1/8/'11 **A Separable Model for Dynamic Networks** with Mark S. Handcock. Invited paper at *American Statistical Association Joint Statistical Meeting*, Miami Beach, FL, USA

16/6/'11 **Latent Space Cluster Models for Social Networks**. Invited paper at *Classification Society Annual Meeting*, Pittsburgh, PA, USA

11/1/'11 **A Separable Model for Dynamic Networks** with Mark S. Handcock. Invited presentation at *SAMSI Complex Networks Modeling Workshop*, Research Triangle Park, NC, USA

Refereed

3/12/'15 **Inference and Simulation for Dynamic Network Models from Egocentrically Sampled Data**. Contributed paper to *MODSIM 2015: 21st International Congress on Modelling and Simulation*, Gold Coast, QLD, Australia

7/12/'12 **Fitting Dynamic Network Models to Static Network Data**. Poster presentation at *Neural Information Processing Systems Conference, Workshop on Algorithmic and Statistical Approaches for Large Social Networks*, Lake Tahoe, NV, USA

10/6/'11 **Network Neighbor Effects on Customer Churn in Cell Phone Networks** with Pedro M. A. Ferreira (presenter), Rahul Telang. Contributed paper to *Seventh Symposium on Statistical Challenges in Electronic Commerce Research (SCECR 2011)*, Rio de Janeiro, RJ, Brazil

12/12/'08 **Adjusting for Network Size and Composition Effects in Exponential Family Random Graph Models** with Mark S. Handcock and Martina Morris. Poster presentation at *Neural Information Processing Systems Conference, Workshop on Analyzing Graphs*, Whistler, BC, Canada

Seminar

2/2/'17 **Inference for Social Network Models from Egocentrically-Sampled Data**. Seminar presentation at *University of California, Irvine*, Irvine, CA, USA

9/6/'16 **Inference for Social Network Models from Egocentrically-Sampled Data**. Seminar presentation at *Australian National Unviersity*, Canberra, ACT, Australia

2/4/'15 **Inference for Social Network Models from Egocentrically-Sampled Data**. Seminar presentation at *University of New South Wales*, Sydney, NSW, Australia

26/11/'15 **Modelling of Dynamic Networks based on Egocentrically-Sampled Data**. Seminar presentation at *NIASRA Fellows Meeting*, Goulburn, NSW, Australia

14/10/'14 **Inference for Exponential-Family Random Graph Models based on Egocentrically-Sampled Data**. Seminar presentation at *Macquarie University*, Sydney, NSW, Australia

26/3/'14 **Inference for Exponential-Family Random Graph Models based on Egocentrically-Sampled Data**. Seminar presentation at *NIASRA Fellows Meeting*, Goulburn, NSW, Australia

Other Recent

17/11/'16 **Estimation of Exponential-Family Random Graph Mixed Models with Dyadic Dependence: Combining MCMC with Analytic Approximation**. Presentation at *1st Annual Australian Social Network Analysis Conference*, Hawthorn, VA, Australia

8/4/'16 **Estimation of Exponential-Family Random Graph Mixed Models With Dyadic Dependence**. Presentation at *International Network for Social Network Analysis Annual Conference: Sunbelt XXXVI*, Newport Beach, CA, USA

28/6/'15 **Quantifying Uncertainty in Dynamic Network Models Fit to Egocentrically Sampled Data**. Presentation at *International Network for Social Network Analysis Annual Conference: Sunbelt XXXV*, Brighton, UK

6/8/'14 **Inference for Exponential-Family Random Graph Models Based on Egocentrically Sampled Data** with Martina Morris. Presentation at Topic Contributed Session at *American Statistical Association Joint Statistical Meeting*, Boston, MA, USA

19/2/'14 **Adjusting Reciprociy and Triadic Effects in ERGMs for Network Size** with Eric D. Kolacyzk. Presentation at *International Network for Social Network Analysis Annual Conference: Sunbelt XXXIV*, St. Pete Beach, FL, USA

25/5/'13 **Rigorous ERGM Inference for Egocentrically Sampled Data** with Martina Morris, Steven M. Goodreau, and Mark S. Handcock. Presentation at *International Network for Social Network Analysis Annual Conference: Sunbelt XXXIII*, Hamburg, Germany

Service

Software

Statnet Project **an open-source project to develop a suite of R packages for analysis and statistical modeling of network data**
`http://www.statnet.org`
Contributor since 2007; Core developer since 2008

ergm **an R package in the `statnet` suite for fitting, visualization, and diagnosing of exponential random graph models (ERGMs)**
`http://cran.r-project.org/package=ergm`
Contributor since 2007; Core developer since 2008; Maintainer since 2012

tergm **an R package in the `statnet` suite for fitting, visualization, and diagnosing of dynamic network models based on ERGMs**
`http://cran.r-project.org/package=tergm`
Creator and maintainer since 2012

ergm.count **an R package in the `statnet` suite extending `ergm` to fit and simulate ERGMs for networks of counts**
`http://cran.r-project.org/package=ergm.count`
Creator and maintainer since 2012

ergm.rank **an R package in the `statnet` suite extending `ergm` to fit and simulate ERGMs for networks of ranks**
`http://cran.r-project.org/package=ergm.rank`
Creator and maintainer since 2016

ergm.ego **an R package in the `statnet` suite extending `ergm` to fit and simulate ERGMs for egocentrically sampled data**
`http://cran.r-project.org/package=ergm.ego`
Creator and maintainer since 2016

latentnet **an R package in the `statnet` suite for fitting latent space and latent cluster models to binary and weighted networks**
`http://cran.r-project.org/package=latentnet`
Core developer and maintainer since 2005

networkDynamic **an R package in the `statnet` suite for storing and processing dynamic network data**
`http://cran.r-project.org/package=networkDynamic`
Contributor since 2012

Yet Another Bayes's Rule Applet **an interactive Java applet illustrating the Bayes's Rule**
`http://www.krivitsky.net/teaching/BayesRule.html`
Creator and maintainer since 2012

Organisational

'16 **Statistician** for the *University of Wollongong Animal Ethics Committee*.

Degree Coordinator for the *Masters in Statistics Program*.

Member for the *School of Mathematics and Applied Statistics Internationalisation Committee*.

'14–'16 **Member** for the *School of Mathematics and Applied Statistics Computing Committee*.

'14–'16 **Seminar Convener** for the *National Institute for Applied Statistics Research Australia*.

'12 **Co-Organizer and Co-Chair** for the *2012 NIPS Workshop on Algorithmic and Statistical Approaches for Large Social Networks*.

Peer Review

'16 for *Science*, *Journal of Statistical Software*, *Journal of the American Statistical Association*, *Journal of the Royal Statistical Society, Series B*.

'15 for *Journal of Statistical Software*, *Social Networks*, *Sociological Methodology*, *Annals of Applied Statistics*, *Computational Statistics and Data Analysis*, *Journal of the Royal Statistical Society, Series B*, Swiss National Science Foundation (Grant).

'14 for Health Research Council of New Zealand (Grant), *Journal of Computational and Graphical Statistics*, *Journal of Statistical Software*, *Annals of Applied Statistics*.

'13 for *Social Networks*, *Sociological Methodology*, *Annals of Applied Statistics*, *Journal of Computational and Graphical Statistics*.

'08–'12 for *Social Networks*, *Annals of Applied Statistics*, *Journal of the American Statistical Association*, *IMS Electronic Journal of Statistics*, *Journal of Mathematical Psychology*, *Science*, *Sociological Methodology*, *Annals of Statistics*, *Journal of Statistical Theory and Practice*, *Statistica Sinica*.

Memberships and Certifications

Memberships **International Network for Social Network Analysis**
Member since February 2009

American Statistical Association
Member since July 2007

Certifications **Society of Actuaries/Casualty Actuarial Society**
Passed Level 1 Exam in June 2002

Other Information

Citizenship **United States of America**
Naturalized in 2000

Languages **Russian** (native speaker)
English (native-level)
French (some competence)
Japanese (some competence)

Programming R, Python, C, C++, Java, SQL (MySQL and Oracle), S-Plus, Matlab

Software *WinBUGS*, *JAGS*, *SAS*, *MINITAB*, *DataDesk*

Hobbies Bicycling, scientific skepticism, satire and parody, statistically themed rap, Dance Dance Revolution