Tyler Grimes

June 10, 2020
Email: tyler.grimes@ufl.edu
Website: tgrimes.github.io

Education

Ph.D. Biostatistics   2016 – August 2020
University of Florida, Gainesville FL
Dissertation Advisor: Somnath Datta
Thesis: (tentative) "Some contributions to the differential network analysis of –omics data"

M.S. Mathematics, concentration in Statistics   2014 – 2016
University of North Florida, Jacksonville FL
Thesis Advisor: Ping Sa
Thesis: "A saddlepoint approximation to hypothesis test of variance for non-normal populations"

B.S. Mathematics, minor in Computer Science   2010 – 2014
University of Central Florida, Orlando FL

Employment

Graduate Research Assistant   2016 – present
University of Florida, Department of Biostatistics

Graduate Teaching Assistant   2014 – 2016
University of North Florida, Department of Mathematics and Statistics

Teaching Experience

Temporary Instructor – Large Sample Theory, University of Florida   Spring 2019, 2020
- Gave lectures on probability, modes of convergence, U-statistics, and maximum likelihood estimation in the absence of Professor Somnath Datta.

Instructor – Business Calculus, University of North Florida   Spring 2016
- Duties included lecturing, holding weekly office hours, and creating the course syllabus, lecture notes, homework sets, quizzes, and exams.

Teaching Assistant, University of North Florida   2014 – 2016
- Assisted in elementary statistics courses. Presented information, lead discussions, and administered quizzes in weekly breakout sessions; managed computer lab sessions; held weekly office hours.

Publications

1. **Grimes, T.**, Walker, A., Datta, S., Datta, S., (2018) Predicting survival times for neuroblastoma patients using RNA-Seq expression profiles. *Biology direct*, 13(1), 11.

2. Walker, A., **Grimes, T.**, Datta, S., Datta, S., (2018) Unraveling bacterial fingerprints of city subways from microbiome 16S gene profiles. *Biology direct*, 13(1), 10.

3. **Grimes, T.**, Potter, S., Datta, S., (2019) Integrating gene regulatory pathways into differential network analysis of gene expression data. *Scientific reports,* 9(1), 5479.

4. **Grimes, T.**, Datta, S., SeqNet: an R package for generating gene-gene networks and simulating RNA-seq data. *Journal of statistical software,* (accepted; to appear).

Under Review:
5. **Grimes, T.**, Datta, S., A probabilistic generator for large-scale gene association networks. *Bioinformatics.*

Conference Proceedings:
6. **Grimes, T.**, Datta, S., (2019) A random graph generation model for transcription networks and nonparametric simulator for RNA-seq expression data. *Computer Data Analysis and Modeling.* Proceedings of the XII International Conference, Minsk. September 18-22, 2019, Eds: P. Filzmoser and Y. Kharin, pp. 37-42. ISBN 978-985-566-811-5.

In Progress:
7. **Grimes, T.**, Datta, S., dnapath: an R package for pathway-based differential network analysis.

8. **Grimes, T.**, Datta, S., (tentative) Inferring dynamic networks from scRNA-seq data

9. **Grimes, T.**, Datta, S., (tentative) Identifying cancer driver genes from differential co-expression networks.

10. **Grimes, T.**, Ping, S., A saddlepoint approximation to hypothesis tests of variance for non-normal populations.

Presentations

Talks:

1. ISMB/CAMDA International Conference, Chicago, IL   2018
   "An exploratory approach for identifying novel biomarkers in high-risk cancer patients from RNA-seq data"

2. ISMB/ECCB International Conference, Prague, Czech Republic   2017
   "Predicting survival times for neuroblastoma patients using RNA-Seq expression profiles"

Posters:

3. JSM, Denver, CO.   2019
   "Integrating gene regulatory pathways into differential network analysis of gene expression data"

4. UF College of PHHP Research Day, Gainesville, FL.   2019
   "A pathway-based approach to differential network analysis of gene expression data"

5. IISA International Conference on Statistics, Gainesville, FL.   2018
   "Predicting Survival Times for Neuroblastoma Patients Using RNA-Seq Expression Profiles"

6. UF College of PHHP Research Day, Gainesville, FL.   2018
   "Predicting Survival Times for Neuroblastoma Patients Using RNA-Seq Expression Profiles"

7. UF College of Medicine Celebration of Research, Gainesville, FL.   2018
   "Differential network analysis based on next-generation sequencing data"

8. UF Graduate Student Research Day, Gainesville, FL.   2018
   "Predicting Survival Times for Neuroblastoma Patients Using RNA-Seq Expression Profiles"

9. UF Dept. of Statistics Winter Workshop, Gainesville, FL.   2018
   "Differential network analysis based on next-generation sequencing"

10. JSM, Baltimore, MD.   2017
    "Differential network analysis based on next-generation sequencing"

11. FaceBase Scientific Meeting, Boston, MA.   2017
    "A differential network analysis of palatal development"

Service

Founding President - Biostatistics Student Organization   2017 – 2019
Department of Biostatistics, University of Florida

Executive Board Member - Doctoral Student Council   2017 – 2019
College of Public Health and Health Professionals, University of Florida

Student Representative - Department of Biostatistics   2019
College of PHHP Development Board Meeting, University of Florida

Student Representative - Department of Biostatistics   2017
College of PHHP Advisory Board Member Meeting, University of Florida

Projects

My github account hosts various projects including course projects such as a stochastic approximation algorithm for minimum graph bisection; conference challenges including the CAMDA 2017 Neuroblastoma challenge; and other personal projects.

My methodological research is implemented in various R packages. These include SeqNet, an R package for simulating RNA-sequencing data from any underlying association network; and dnapath, an R package that performs differential network analysis based on known pathway information, which includes methods for easily summarizing and visualizing the results.

Professional Memberships

American Statistical Association (ASA)
International Society for Computational Biology (ISCB)

Journal Referee

Bioinformatics (1)
BMC Bioinformatics (3)
Communications in Statistics - Simulation and Computation (2)

Honors and Awards

Student Travel Award   2019
Department of Biostatistics, University of Florida

Travel Fellowship   2018
Granted by CAMDA committee to present at ISMB/CAMDA 2018, Chicago, Illinois

Travel Fellowship   2017
Granted by CAMDA committee to present at ISMB/ECCB 2017, Prague, Czech
Republic

PhD Student Travel Award   2017
College of Public Health and Health Professionals, University of Florida

Student Travel Award   2017
Department of Biostatistics, University of Florida

Outstanding Graduate Student in Statistics   2016
University of North Florida

UCF Scholars Award (scholarship and summer grant)   2012 – 2013
University of Central Florida

Florida Academic Scholars Award (four-year scholarship) 2010 – 2014

Funding

U.S. Department of Veterans Affairs IPA, "Analysis of Traumatic Brain Injury and
other Brain Rehabilitation Data", September 2018 – August 2019; VA PIs: Julia Waid-
Ebbs and Janis Daly