Gregory J. Hunt

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Department of Mathematics
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Positions

2019 – Assistant Professor Department of Mathematics, William & Mary

Education

2018	PhD	Statistics	University of Michigan
2015	MA	Statistics	University of Michigan
2013	BA	Mathematics, Computer Science	Drew University

Publications

1. **G. J. Hunt*** and R. L. Hunt*. Locating the Isolator Shock Train Leading Edge with Limited Pressure Information. *Accepted. To appear in the AIAA Journal of Propulsion and Power.*
2. **G. J. Hunt**, J. A. Gagnon-Bartsch. The role of scale in the estimation of cell-type proportions. Annals of Applied Statistics. Volume 15, Issue 1, March 2021, Pages 270 - 286.
`https://doi.org/10.1214/20-AOAS1395`
3. **G. J. Hunt**, C. Ground, R. L. Hunt. Fast Approximations of Spectral Lineshapes Enable Optimization of a Filtered Rayleigh Scattering Experiment. Measurement Science and Technology. Volume 31, Issue 9, June 2020.
`https://doi.org/10.1088/1361-6501/ab8a7e`

   †Outstanding Paper Award for MST's 2020 section on Optical and laser-based techniques.`https://doi.org/10.1088/1361-6501/abfc84`
4. **G. J. Hunt**, M. A. Dane, J. E. Korkola, L. M. Heiser, J. A. Gagnon-Bartsch. Transformations of Microenvironment Microarray Data Improves Discovery and Integration of Latent Effects. Journal of Computational and Graphical Statistics. Volume 29, Issue 4, April 2020, Pages 929-941.
`https://doi.org/10.1080/10618600.2020.1741379`
5. **G. J. Hunt**, S. Freytag, M. Bahlo, and J. A. Gagnon-Bartsch, dtangle: accurate and robust cell type deconvolution, Bioinformatics, Volume 35, Issue 12, June 2019, Pages 2093–2099
`https://doi.org/10.1093/bioinformatics/bty926`

Manuscripts Under Review

6. **G. J. Hunt** and Johann A. Gagnon-Bartsch. Containerized Analyses Enable Interactive and Reproducibile Sharing. *Under Review.*
`arxiv.org/abs/2103.16004`

Conference Proceedings

1. R. L. Hunt and **G. J. Hunt**. Adaptive Method to Locate the Isolator Shock Train Leading Edge Given Limited Pressure Information. AIAA Propulsion and Energy 2020.
   https://doi.org/10.2514/6.2020-3715

* = equal authorship contributions
† = award winning

Talks

1. Robust Re-scaling of Imaging Data to Improve Discovery of Latent Effects. *JSM*. August 2021. Seattle, WA. *Invited.*
2. An Adaptive Method for Shock Tracking. *Dataworks*. March 2021. Baltimore, MD. *Contributed.* (Virtual due to COVID-19)
3. Finding and Removing Unwanted Spatial Effects in Microenvironment Microarray Data. *ENAR*. March 2021. Baltimore, MD. *Contributed.* (Virtual due to COVID-19)
4. Transformation and Integration of Microenvironment Microarray Data *ICSA*. May 2020. Houston, TX. *Invited.* (Virtual due to COVID-19)
5. The Role of Scale in the Estimation of Cell-type Proportions. *IBC*. July 2020. Seoul, South Korea. *Contributed.* (Virtual due to COVID-19)
6. Leveraging Statistical Learning to Make Fast Approximations of Spectral Lineshapes. *FPCB Machine Learning and Technology Group, NASA Langley*. April 2020. Hampton, VA. *Invited.*
7. Estimation of Cell-type Proportions in Complex Tissue. *ENAR*. March 2020. Nashville,TN. *Contributed.*
8. Estimating Cell Types in Complex Brain Tissue. *Joint Statistical Meetings*. August 2019. Denver, CO. *Contributed.*
9. Robust Transformation of MEMA data. *WNAR*. June 2019. Portland, OR. *Invited.*
10. dtangle: accurate and fast cell type deconvolution. *William & Mary Department of Mathematics*. December 2017. Williamsburg, VA. *Invited.*
11. dtangle: a simple and fast cell type deconvolution estimator. *Joint Statistical Meetings*. August 2017. Baltimore, MD. *Contributed.*
12. dtangle: a simple and fast cell type deconvolution estimator. *Michigan Student Symposium for Interdisciplinary Statistical Sciences*. March 2017. Ann Arbor, MI. *Contributed.*

At William & Mary

13. Everyday Reproducibility. *Biomathematics Group*. March 2021.
14. Removing Unwanted Spatial Effects from MEMA data. *Biomathematics Group*. October 2020.
15. Adapting Sparse Measurements for Control of Hypersonic Vehicles. *Applied Mathematics Seminar*. September 2020.
16. Estimation of Cell-type Proportions in Complex Tissue. *Biomathematics Group*. October 2019.
17. Support Vector Spectrum Approximations. *Applied Mathematics Seminar*. September 2019.
18. Deconvolution and Transformation. *Biomathematics Group*. November 2018.

Grants

Funded.

1. Virginia Space Grant Consortium: New Investigator Program. “Using Machine Learning to Efficiently Model Filtered Rayleigh Scattering.” 2019-2020. Role: PI. Amount: $20,000.

2. Virginia Space Grant Consortium: Innovative Proposals in Education . “Summer Collaborative Bridge: Connecting Student Summer Research Experiences Across Academic and Industry.” 2020. Role: PI (with Rex Kincaid). Amount: $6,558.
3. Virginia Space Grant Consortium: Innovative Proposals in Education. “Summer Collaborative Bridge: Connecting Student Summer Research Experiences Across Academic and Industry.” February 2021. Role: PI (with Rex Kincaid). Amount: $7,000.
4. William & Mary: Pre-Tenure Summer Grant. “Finding and Removing Unwanted Spatial Effects in Breast Cancer Experiments.” Submitted March 2021. Role: PI. Amount: $4,000.

Awards

1. Outstanding Paper Award for 2020 in the field of Optical and laser-based techniques for “Fast approximations of spectral lineshapes to enable optimization of a filtered Rayleigh scattering experiment”. Given by Measurement Science and Technology. 2021. `https://doi.org/10.1088/1361-6501/abfc84`
2. Michigan Institute for Data Science 2020 Reproducibility Challenge. Category B: Exact Reproducibility winner. 2020.
3. Outstanding Graduate Student Instructor. University of Michigan, Department of Statistics. 2016.

Software

1. `hspe`: Hybrid-Scale Proportion Estimation.
   https://gjhunt.github.io/hspe
2. `app`: Adaptive Pressure Profile shock train tracking.
   https://gjhunt.github.io/app
   https://pypi.org/project/app-stle/
3. `svsa`: A python package for creating quick and accurate approximations of any spectral lineshapes model.
   https://gjhunt.github.io/svsa
   https://pypi.org/project/svsa/
4. `rrscale`: Robust re-scaling to improve recovering of latent effects.
   cran.r-project.org/package=rrscale
   https://gjhunt.github.io/rr/
5. `dtangle`: Cell type deconvolution for high-throughput gene profiling technologies.
   cran.r-project.org/package=dtangle
   https://gjhunt.github.io/dtangle
6. `dtangle.data`: annotated collection of high-throughput genomic data for deconvolution.
   https://gjhunt.github.io/dtangle/
7. Contributor to `glmm` in `statsmodels`: statistical modeling and econometrics in Python.
   github.com/statsmodels/statsmodels

Teaching

William & Mary

Spring 21	MATH 452/552	Mathematical Statistics
Spring 21	CSCI 688	Data Mining
Fall 20	MATH 300	Mathematical Sciences Writing
Fall 20	MATH 451/551 (x2)	Probability
Spring 20	MATH 300	Mathematical Sciences Writing
Spring 20	CSCI 708	Research Project in COR
Spring 20	MATH 451/551 (x2)	Probability
Fall 19	CSCI 690	Readings in Computer Science
Fall 19	MATH 459	Data Mining
Fall 19	MATH 452/552	Mathematical Statistics
Spring 19	CSCI 688	Data Mining
Spring 19	MATH 451/551	Probability

Univerisity of Michigan (As Teaching Assistant)

Summer 17		Big Data Summer Institute
Winter 17	STATS 415 (x2)	Data Mining and Statistical Learning
Fall 16	STATS 408 (x2)	Statistical Principles for Problem Solving: A Systems Approach.
Winter 16	STATS 408 (x2)	Statistical Principles for Problem Solving: A Systems Approach.
Fall 15	STATS 403 (x2)	Introduction to Quantitative Research Methods
Winter 15	STATS 485 (x2)	Capstone Seminar
Fall 14	STATS 250 (x2)	Introduction to Statistics and Data Analysis
Summer 14	STATS 250	Introduction to Statistics and Data Analysis
Winter 14	STATS 250 (x2)	Introduction to Statistics and Data Analysis
Fall 13	STATS 250 (x2)	Introduction to Statistics and Data Analysis

Mentoring

Masters

Cassandra Chang**	VSGC Project	4/2019 - 5/2020

Undergraduate

Owen Guch	Research Project	04-2021 –
Brian Lorn**	VSGC Project	3/2021 –
Ray Shen	Honors Thesis	2/2021 –
Isabel Agostino**	VSGC Project	4/2020 – 8/2020
Alison Reynolds*	Honors Thesis	1/2020 –
Eli Gnesin**	VSGC Project w/ R. Kincaid	6/2020 - 8/2020
Grace Smith*	Honors Thesis	1/2020 –
Alan Song	Research Project	11/2019 – 5/2020
Bin Yang	Research Project	9/2019 – 12/2019
Chris Elsner*	Research Project	1/2019 – 4/2019
Evan Wong**	EXTREEMS-QED Summer Research	3/2018 – 7/2018

* = Internal Funded Summer Research
** = External Funded Summer Research

Thesis Committees

Alison Reynolds	Undergraduate Honors Defense	5/13/2021
Maliha Ahmad	Undergraduate Honors Defense	5/2/2019

Professional Activities

Memberships

- American Statistical Association
- Institute of Mathematical Statistics

Conference Sessions Organized

- Imaging in High-throughput -omics, Co-Organizer and Chair. 2019. Western North America Region (WNAR) of The International Biometry Society.

Journal Referee

- Briefings in Bioinformatics
- Bioinformatics
- Inflammatory Bowel Diseases
- GigaScience
- PLOS Computational Biology
- Journal of Healthcare Engineering
- Computational and Structural Biotechnology Journal

Committees

Collegewide Service

1. Data science steering committee (Spring 2019 –)
2. Data science TE hiring committee (x2) (Spring 2021)
3. Data science NTE hiring committee (Spring 2019)

Departmental Service

1. Applied Mathematics Seminar Organizer (Fall 2021)
2. Pre-major Advisor (Fall 2020)
3. Applied Mathematics Seminar Organizer (Fall 2020)
4. Pre-major Advisor (Fall 2019)