

# David E. Jones

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CONTACT INFORMATION      djones@stat.tamu.edu  
                                  https://david-jones-statistics.github.io/

EXPERIENCE                **Google LLC**, Seattle, WA  
Senior Data Scientist, Oct 2020–present

**Texas A&M University**, College Station, TX  
Adjunct Assistant Professor, Department of Statistics, Sept 2020–present

**Texas A&M University**, College Station, TX  
Assistant Professor, Department of Statistics, Sept 2018–Aug 2020

**Duke University**, Durham, NC  
Postdoctoral Fellow, Department of Statistical Science, Aug 2016–July 2018

**SAMSI**, Durham, NC  
Postdoctoral Fellow, ASTRO program, Aug 2016–July 2018

**Government Home Office**, London, UK  
Statistical Officer, Migration Publication and Asylum Statistics, Jan–Aug 2010

EDUCATION                **Harvard University**, Cambridge, MA  
PhD, Department of Statistics, Aug 2010–May 2016  
Thesis: “Information: Measuring the Missing, Using the Observed, and Approximating the Complete.” Advisor: Xiao-Li Meng.

**University of Nottingham**, Nottingham, UK  
MMath, School of Mathematical Sciences, Aug 2005–June 2009  
Graduated with First Class Honors

- PUBLISHED PAPERS [1] \*Ding F., He S., Jones D. E., Huang J. (2022). “Functional PCA With Covariate-Dependent Mean and Covariance Structure.” *Technometrics*.  
(\* = PHD STUDENT ADVISEE)
- [2] Jones D. E., Stenning D. C., Ford E. B., Wolpert R. L., Loredó T. J., Dumusque, X. (2022). “Improving Exoplanet Detection Power: Multivariate Gaussian Process Models for Stellar Activity.” *Annals of Applied Statistics*, 26(2), 652 – 679.
- [3] Jones D. E., Trangucci R. N., Chen Y. (2021). “Quantifying Observed Prior Impact.” *Bayesian Analysis*.
- [4] Meyer A. D., van Dyk D. A., Kashyap V. L., Campos L. F., Jones D. E., Siemiginowska A., Zezas A. (2021). “eBASCS: Disentangling Overlapping Astronomical Sources II, using Spatial, Spectral, and Temporal Information.” *Monthly Notices of the Royal Astronomical Society*, 506(4), 6160 – 6180.
- [5] Wang L., Jones D. E., Meng X-L. (2020). “Warp Bridge Sampling: The Next Generation.” *Journal of the American Statistical Association*.
- [6] Gilbertson C., Ford E. B., Jones D. E., Stenning D. S. (2020). “Towards Extremely Precise Radial Velocities: II. A Tool For Using Multivariate Gaussian Processes to Model Stellar Activity.” *The Astrophysical Journal*, 905(2), 155.
- [7] Ni Y., Jones D. E., Wang Z. (2020). “Consensus Variational and Monte Carlo Algorithms for Bayesian Nonparametric Clustering.” *2020 IEEE International Conference on Big Data*.
- [8] Jones M. G., Espada D., Verdes-Montenegro L., Huchtmeier W. K., Lisenfeld U., Leon S., Sulentic J., Sabater J., Jones D. E., Sanchez S., Garrido J. (2018). “The AMIGA Sample of

Isolated Galaxies XIII. The HI Content of an Almost “Nurture Free” Sample.” *Astronomy & Astrophysics*, 609, A17.

- [9] Jones D. E., Kashyap V., van Dyk D. A. (2015). “Disentangling Overlapping Astronomical Sources using Spatial and Spectral Information,” *Astrophysical Journal*, 808: 2, 137 – 160. GitHub repo: <https://github.com/astrostat/BASCS>.
- [10] Kypraios T., O’Neill P. D., Jones D. E., Ware J., Edgeworth J. D. , Cooper B.S. (2011). “Effect of Systemic Antibiotics and Topical Chlorhexidine on Methicillin-Resistant *Staphylococcus Aureus* (MRSA) Carriage in Intensive Care Unit Patients.” *Journal of Hospital Infections*, 79: 3, 222 – 226.
- [11] Sotiropoulos S. N., Jones D. E., Bai L., Kypraios T. (2010). “Exact and Analytic Bayesian Inference for Orientation Distribution Functions.” 2010 *IEEE International Symposium on Biomedical Imaging*, 1189 – 1192.

PAPERS IN  
PROGRESS  
(\* = PHD  
STUDENT ADVISEE)

- [1] Jones D. E., Meng X-L. (2020+). “Designing Test Information and Test Information in Design.” *Under revision*.
- [2] \*Pantoja K., Jones D. E., Tuo R., Sang H. (2022+). “Sequential Minimum Energy Designs for Model Selection and Checking.” *Submitted*.
- [3] Ma J., \*Pantoja K., Jones D. E. (2022+). “Predictive modeling of compositional data via supervised log-ratios.” *In preparation*.
- [4] \*Ding F., Jones D. E., He S., Meng X-L. (2022+) “Warp-U MCMC and Stochastic Bridge Sampling.” *In preparation*.

RESEARCH  
PROJECTS AND  
INTERESTS

**Bayesian methodology:** Bayesian hierarchical and non-parametric modeling and computation; quantifying prior impact; estimating normalizing constants

**Machine learning and Astrostatistics** multivariate Gaussian process modeling; scientifically modified PCA; multi-source data of unknown quality; scalable clustering; functional PCA; exoplanet detection; source detection; lightcurve classification

**Experimental design:** optimal experimental design for classification and model selection and model checking; reconciling design criteria for different goals

**Statistical information:** measuring statistical information for hypothesis testing, model selection, and classification; prior information; rethinking sensitivity analysis

INVITED  
PRESENTATIONS

- 05/2021 International Indian Statistical Association (IISA) 2021 Conference (online). Title: *Improving Exoplanet Detection Power: Multivariate Gaussian Process Models for Stellar Activity*.
- 11/2020 ICERM Workshop on Statistical Methods for the Detection, Classification, and Inference of Relativistic Objects (online). Title: *Quantifying Observed Prior Impact*.
- 08/2020 Joint Statistical Meetings (JSM), online. Title: *Improving Exoplanet Detection Power via Stellar Activity Modeling*.
- 12/2019 Computational and Methodological Statistics (CMStats), London, UK. Title: *Improving Exoplanet Detection Power: Multivariate Gaussian Process Models for Stellar Activity*.
- 07/2019 RISE-CHASC Astrostatistics Workshop, Harvard-Smithsonian Center for Astrophysics, Cambridge, MA. Title *Lightcurves: probabilistic template construction and observation scheduling*.
- 04/2019 Workshop on Astronomy & Statistics, Texas A&M University, College Station, TX. Title: *Improving Exoplanet Detection Power: Multivariate Gaussian Process Models for Stellar Activity*.

- 02/2019 Dirac Institute, University of Washington, Seattle, WA. Title: *Disentangling Overlapping Astronomical Sources using Spatial, Spectral, and Temporal Information*.
- 07/2018 Joint Statistical Meetings (JSM), Vancouver, Canada. Title: *Detecting Planets: Jointly Modeling Radial Velocity and Stellar Activity Time Series*.
- 07/2018 Joint Statistical Meetings (JSM), Vancouver, Canada. Title: *Bayesian Non-Parametric Hierarchical Models for Lightcurve Classification and Observation Decisions* (poster).
- 04/2018 International Astronomical Consortium for High Energy Calibration (IACHEC) meeting, Avigliano Umbro, Italy. Title: *Gaussian Process Methods for Astronomy* (remotely).
- 02/2018 Michigan State University Statistics Department Seminar, East Lansing, MI. Title: *Detection Methodology and Statistical Information Theory for Exoplanet Hunting*.
- 01/2018 Texas A&M University Statistics Department Seminar, College Station, TX. Title: *Exoplanets: Detection and Design Methods*.
- 01/2018 University of Florida Statistics Department Seminar, Gainesville, FL. Title: *Designing Test Information and Test Information in Design*.
- 01/2018 Florida State University Statistics Department Seminar, Tallahassee, FL. Title: *Designing Test Information and Test Information in Design*.
- 12/2017 Computational and Methodological Statistics (CMStatistics), London, UK. Title: *Constructing Probabilistic Templates for Astronomical Lightcurves*. Session EO021: Modern applications of functional data analysis.
- 12/2017 North Carolina State University Statistics Department Seminar, Raleigh, NC. Title: *Improving Exoplanet Detection Power: Multivariate Gaussian Process Models for Stellar Activity*.
- 10/2017 University of Georgia Statistics Department Seminar, Athens, GA. Title: *Detecting Planets: Jointly Modeling Radial Velocity and Stellar Activity Time Series*.
- 09/2017 University of Virginia Statistics Department Seminar, Charlottesville, VA. Title: *Hunting for Planets in the Presence of Stellar Activity*.
- 08/2017 Third Workshop on Extremely Precise Radial Velocities (EPRV III), Penn State University, State College, PA. Title: *Jointly Modeling Radial Velocity and Stellar Activity Time Series ... Or Using GPs to Find EPs* (plenary talk).
- 08/2017 Third Workshop on Extremely Precise Radial Velocities (EPRV III), Penn State University, State College, PA. Title: *Discussion of Information Needed for Disentangling RV Signals and Stellar Jitter*.
- 08/2017 Joint Statistical Meetings (JSM), Baltimore (MD). Title: *Overview of SAMSI Program on Statistical, Mathematical and Computational Methods for Astronomy (ASTRO)*. Session 83: Invited poster presentations.
- 03/2017 ICTS-SAMSI Workshop on Time Series Analysis for Synoptic Surveys and Gravitational Wave Astronomy, ICTS, Bangalore, India. Title: *Probabilistic Templates for Periodic Sources*.
- 08/2016 SAMSI ASTRO Program Opening Workshop, SAMSI, Durham (NC). Title: *Disentangling Overlapping Astronomical Sources using Spatial, Spectral, and Temporal Information*.
- 08/2016 Student Paper Award, Section on Bayesian Statistical Science (SBSS), Joint Statistical Meetings (JSM), Chicago, IL. Title: *Designing Test Information and Test Information in Design*.
- 04/2016 Demspeter Award Colloquium, Harvard University Statistics Department, Cambridge, MA. Title: *Designing Test Information and Test Information in Design*.

CONTRIBUTED  
PRESENTATIONS

- 07/2019 Joint Statistical Meetings (JSM), Denver, CO. Title: *Warp Bridge Sampling: The Next Generation*.
- 06/2018 International Society for Bayesian Analysis (ISBA) World Meeting, Edinburgh, UK. Title: *Warp Bridge Sampling: The Next Generation* (poster).
- 08/2017 Joint Statistical Meetings (JSM), Baltimore, MD. Title: *Observed Prior Information*.
- 06/2017 American Astronomical Society (AAS) 230th Meeting, Austin, TX. Title: *Detecting Planets in the Presence of Stellar Activity* (poster).
- 05/2017 SAMSI ASTRO Program Transition Workshop, SAMSI, Durham, NC. Title: *Detecting Planets in the Presence of Stellar Activity*.
- 10/2016 Advances in Interdisciplinary Statistics and Combinatorics, Greensboro, NC. Title: *Disentangling Overlapping Astronomical Sources using Spatial, Spectral, and Temporal Information*.
- 06/2016 International Society for Bayesian Analysis (ISBA) World Meeting, Sardinia, Italy. Title: *Designing Test Information and Test Information in Design* (poster).
- 06/2016 Statistical Challenges in Astronomy (SCMA) 6, Carnegie Mellon University, Pittsburgh, PA. Title: *Observation Scheduling for Real-Time Lightcurve Classification*.
- 04/2016 Institute for Theory and Computation at the Harvard-Smithsonian Center for Astrophysics, Cambridge, MA. Title: *Disentangling Overlapping Astronomical Sources using Spatial and Spectral Information*.
- 01/2016 American Astronomical Society (AAS) 227th Meeting, Orlando, FL. Title: *Designing Information Measures for Real-Time Lightcurve Classification* (poster).
- 08/2015 Joint Statistical Meetings (JSM), Seattle, WA. Title: *Designing Test Information and Test Information in Design*.
- 08/2013 Joint Statistical Meetings (JSM), Montreal, Canada. Title: *Separating Overlapping Astronomical Sources*.

## FUNDING

TAMU T3-grant, “Minimum Energy Designs For Model Selection And Classification”, 01/2019 - 12/2020, \$30,000.

## STUDENTS

**Statistics PhD Advisor:**

Fei Ding (graduated 2021)

Kristyn Pantoja

**Committee member:**

Lihao Yin (PhD)

James Dole (MS)

Jacqueline Antwi-Danso (PhD, Physics & Astronomy)

Maryam Habibi (PhD, Biological & Agricultural Engineering)

Shi Chang (PhD, Civil Engineering)

GRADUATE  
AWARDS**2016 Arthur P. Dempster Award**

*Harvard University Statistics Department*

Awarded annually to at most two students for “significant contributions to theoretical or foundational research in statistics.” Colloquium title: *Designing Test Information and Test Information in Design*.

**2016 American Statistical Association Student Paper Competition Award**

*ASA Section on Bayesian Statistical Science*

Awarded to five students presenting contributed papers at the 2016 Joint Statistical Meetings.

**2016 ISBA Travel Award**

*International Society for Bayesian Analysis*

Awarded to junior researchers presenting at the ISBA 2016 World Meeting.

UNDERGRADUATE  
AWARDS

**2009 Institute of Mathematics and its Applications Prize**

Awarded annually to the graduating Mathematics student with the best research applications.

**2007 GAAPS Prize for Mathematics**

Awarded annually to the second year Mathematics student with the best examination results.

**2006 Alan Rose Prize**

Awarded annually to the first year Mathematics student with the best examination results.

TEACHING  
EXPERIENCE

**Texas A&M University**, College Station, TX

**Course Instructor**

Stat 654: Statistical Computing with R & Python	Spring 2020
Stat 436: Applied Multivariate Analysis & Statistical Learning	Fall 2019
Stat 689: Statistical Computing with R & Python (new course)	Spring 2019
Stat 636/436: Applied Multivariate Analysis & Statistical Learning (updated version)	Fall 2018

**Friday Science Seminar Invited Speaker**

April 2019

Science seminar series to encourage networking between National Merit, National Hispanic, Science Leadership Scholars, and Honors students.

**Duke University**, Durham, NC

**Course Instructor**

Spring 2018

Statistics 250: Mathematical Statistics

**SAMSI**, Durham, NC

**Interdisciplinary Workshop for Undergraduates**

May 2017

- Designed and introduced a week long research project on lightcurve classification
- Mentored a team of 5 students as they worked on the project and final presentation
- Gave an R tutorial

**Graduate Course on Time Series Methods for Astronomy**

Spring 2017

- Guest lecture on exoplanet detection
- Tutorial on Gaussian Processes
- Guest lecture overviewing SAMSI ASTRO program research topics

**Undergraduate Workshop on Astrostatistics**

Oct 2016

- Lecture on exoplanet detection
- Hands-on Gaussian process tutorial using R

**Penn State University**, State College, PA

**Summer School in Statistics for Astronomers XII**

June 2016

Lecture: Introduction to Parametric and Non-Parametric Regression Methods

**Harvard University**, Cambridge, MA

**Head Teaching Fellow**

Spring 2014

Statistics 102: Statistics in Medicine and Modern Biology

**Teaching Fellow**

Fall 2011–2013; Spring 2012–2013

Statistics 171: Stochastic Processes

Statistics 100: Introduction to Quantitative Methods for the Social Sciences and Humanities

Statistics 110: Introduction to Probability

**Summer School Teaching Fellow**

Summer 2011–2012

S-100: Introduction to Quantitative Methods for the Social Sciences and Humanities

COMPUTING  
EXPERIENCE  
PROFESSIONAL  
ACTIVITIES

R, Python, SQL, Stan, MATLAB, C++, SAS, Stata, Mathematica

**Workshop Organizer**

- Inaugural Astronomical Data Science Workshop, Texas A&M University, Feb 2020.

**Administrative Service**

- President of the Southeast Texas Chapter of the ASA, Feb 2020–present
- Statistics undergraduate program committee, TAMU Statistics Department, Sep 2019–Aug 2020
- Vice-President of the Southeast Texas Chapter of the ASA, Feb 2019–Feb 2020
- Computing committee, TAMU Statistics Department, Sep 2018–Aug 2019
- Grants committee, TAMU Statistics Department, Sep 2018–Aug 2019
- Astrostatistics Interest Group representative, American Statistical Association sections meeting, Baltimore (MD), Aug 2017.
- SAMSI ASTRO program working group administrator, Durham (NC), Aug 2016–Jun 2017.

**Session Chair**

- Invited session: *Towards Perfect and Scalable Distributional Computation*, Joint Statistical Meetings, Denver (CO), July 2019.
- Contributed session: *Statistical and Imaging Methods in Astronomy and Astrophysics*, Joint Statistical Meetings, Baltimore (MD), Aug 2017.
- Contributed session: *Physical Sciences*, Joint Statistical Meetings, Seattle (WA), Aug 2015.

**Panelist**

- Ask-a-statistician session, American Astronomical Society (AAS) meeting, Boston (MA), Jun 2014.
- Graduate student research advice panel, Harvard University Statistics Department, Cambridge (MA), Apr 2014.

**Referee Service**

- Journal of the Royal Statistical Society
- Journal of the American Statistical Association
- Technometrics
- Statistics and Computing
- Electronic Journal of Statistics
- Student paper competition, ASA Section on Bayesian Statistical Science (SBSS)
- Astrophysical Journal
- Astronomy & Astrophysics
- Astronomy and Computing
- Astronomical Journal
- Natural Sciences and Engineering Research Council of Canada