

Susan Vanderplas

Curriculum Vitae

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Education

- 2015
● **PhD, Statistics**, Iowa State University.
Dissertation: The Perception of Statistical Graphics
- 2011
● **MS, Statistics**, Iowa State University.
- 2009
● **BS, Psychology & Applied Mathematical Sciences**, Texas A&M University.

Professional Experience










- 2018
■ **Research Assistant Professor**, Center for Statistics and Applications in Forensic Evidence, Iowa State University.
- 2018
■ **Statistical Consultant**, Nebraska Public Power District.
Provided individual mentoring and project leadership to continue the Business Intelligence Embedded Agent program and provide support for R-related projects.
- 2015
2018
■ **Statistical Analyst**, Nebraska Public Power District.
- 2015
■ **Postdoc**, Iowa State University Office of the Vice President for Research.
- 2014
■ **Consultant**.
Develop web applications, interactive data displays, and statistical analyses for clients including the Iowa Soybean Association, ISU Agronomy Labs, and the USDA.

Scholarship

Contribution percentages estimated from git contributions using `git fame` where possible. Not all projects have github repositories for which this is meaningful.

Journal Publications

11. 2019
● Carriquiry, A., Hofmann, H., Tai, X. H. & **VanderPlas, S.** Machine learning in forensic applications. *Significance* **16**, 29–35. <https://doi.org/10.1111/j.1740-9713.2019.01252.x>.
10. 2019
● **VanderPlas, S.**, Goluch, R. & Hofmann, H. Framed! Reproducing and Revisiting 150 year old charts. *Journal of Computational and Graphical Statistics*. <https://doi.org/10.1080/10618600.2018.1562937>.
Contribution: Programming and analysis (60%), writing (50%).

9. 2018

 Sievert, C., **VanderPlas, S.**, Cai, J., Ferris, K., Khan, F. U. F. & Hocking, T. D. Extending ggplot2 for linked and animated web graphics. *Journal of Computational and Graphical Statistics* **0**, 1–10. <https://doi.org/10.1080/10618600.2018.1513367>.
8. 2017

Vanderplas, S. & Hofmann, H. Clusters Beat Trend!? Testing Feature Hierarchy in Statistical Graphics. *Journal of Computational and Graphical Statistics* **26**, 231–242. <https://doi.org/10.1080/10618600.2016.1209116>.
Contribution: Programming and analysis (90%), writing (50%).
7. 2017

 Accepted March 2017. Awaiting publication.
 Rutter, L., **Vanderplas, S.**, Cook, D. & Graham, M. ggenealogy: An R Package for Visualizing Genealogical Data. *Journal of Statistical Software*. <https://github.com/lrutter/ggenealogyPaper>.
6. 2017

 Submitted as an invited response to Donoho's "50 years of Data Science".
 Hofmann, H. & **Vanderplas, S.** All of This Has Happened Before. All of This Will Happen Again: Data Science. *Journal of Computational and Graphical Statistics* **26**, 775–778. <https://doi.org/10.1080/10618600.2017.1385474>.
Contribution: Writing (75%).
5. 2016

Vanderplas, S. & Hofmann, H. Spatial Reasoning and Data Displays. *IEEE Transactions on Visualization and Computer Graphics*. <https://doi.org/10.1109/TVCG.2015.2469125>.
Contribution: Programming and analysis (90%), writing (75%).
4. 2015

Vanderplas, S. & Hofmann, H. Signs of the Sine Illusion - why we need to care. *Journal of Computational and Graphical Statistics* **24**, 1170–1190. <https://doi.org/10.1080/10618600.2014.951547>.
Contribution: Programming and analysis (50%), writing (60%).
3. 2013

 Budrus, S., Vanderplas, S. & Cook, D. In tennis, do smashes win matches? *Significance* **10**, 35–38. <https://doi.org/10.1111/j.1740-9713.2013.00665.x>.
2. 2010

 Towfic, F., **VanderPlas, S.**, Oliver, C. A., Couture, O., Tuggle, C. K., Greenlee, M. H. W. & Honavar, V. Detection of gene orthology from gene co-expression and protein interaction networks. *BMC bioinformatics* **11**, S7. <https://doi.org/10.1186%2F1471-2105-11-S3-S7>.
1. 2009

 Hull, R., Bortfeld, H. & **Koons, S.** Near-infrared spectroscopy and cortical responses to speech production. *The open neuroimaging journal* **3**, 26. <https://doi.org/10.2174%2F1874440000903010026>.

- In Progress **Truthiness and Statistical Charts** Evaluate whether the truthiness effect (increased belief in a statement based on the presence of an accompanying picture) holds for statistical charts and maps.
- Bullet Signature Resampling** Method for resampling bullet signatures used to calculate match and non-match score distributions.
- Bullet Test Set Validation** Validate an algorithm for bullet matching on several test sets used to test forensic examiner proficiency.
- Footwear Class Characteristic Recognition using Neural Networks** Use convolutional neural networks to automate identification of class characteristics in images of footwear outsoles.

Grants

2018

NIJ R&D in Forensic Science, *Statistical Infrastructure for the Use of Error Rate Studies in the Interpretation of Forensic Evidence*, Collaborator, Funded for FY 2019, \$197,699 total, \$57,596 ISU sub-award.

2018

NIJ R&D in Forensic Science, *Passive Acquisition of Footwear Class Characteristics in Local Populations*, PI, Not funded, \$383,104.

2018

NIJ R&D in Forensic Science, *Evaluating Photogrammetry for 3D Footwear Impression Recovery*, PI, Not funded, \$281,755.

Invited Talks

2019

Statistical Lineups for Bayesians, *JSM*, Section on Statistical Graphics, Denver, CO.

2018

Clusters Beat Trend!? Testing Feature Hierarchy in Statistical Graphics, *SDSS*, Reston, VA.

2015

Animint: Interactive Web-Based Animations Using Ggplot2's Grammar of Graphics, *JSM*, Seattle, WA.

2014

The curse of three dimensions: Why your brain is lying to you, *JSM*, Section on Statistical Graphics Student Paper Session, Boston, MA.

Contributed Talks

2018

Framed! Reproducing 150 year old charts, *JSM*, Vancouver, BC.

2017

A Bayesian Approach to Visual Inference, *JSM*, Baltimore, MD.

2016

Clusters Beat Trend!? Testing Feature Hierarchy in Statistical Graphics, *JSM*, Chicago, IL.

2015

Visual Aptitude and Statistical Graphics, *InfoVis*, Chicago, IL.

2015

Animint: Interactive, Web-Ready Graphics with R, *Great Plains R User Group*, Sioux Center, IA.

2014

Do You See What I See? Using Shiny for User Testing, *JSM*, Boston, MA.

2013

Signs of the Sine Illusion – why we need to care, *JSM*, Montreal, ON.

Software

2018

bulletsamplr, *Resampling of bullet signatures*.

2018

ImageAlignR, *Image registration algorithms for forensics*.

2018

bulletxtctr, *automated matching of 3d bullet scans*.

2018

x3ptools, *Reading, manipulating, and visualizing x3p files*.

2013
2015

animint, *animated, interactive web graphics for R using d3.js*.

Teaching

2019

Stat 585 - Data Technologies for Statistical Analysis, *Iowa State University*.

Frequent guest lecturer, assisted with curriculum development

2017
2018

Business Intelligence Embedded Agent Program, *Nebraska Public Power District*.

Design and implement a program to mentor employees, providing instruction in data science and opportunities to apply new skills within the company. Lead one-on-one and group mentoring sessions to create a sense of community and reinforce skills learned through online courses. Class size: 16

2017

R Workshop, *Nebraska Public Power District*.

3-day internal course on using R for data analysis.

2013
2014

R Workshops, *Iowa State*.

Introduction to R, ggplot2, data management and cleaning, package development, literate programming, and Shiny.

2013

Statistical Methods for Research, *Iowa State, TA*.

Stat 401

2013

Introduction to Business Statistics II, *Iowa State, TA*.

Stat 326

2012

Introduction to Business Statistics II, *Iowa State, TA*.

Stat 326

2011

Statistical Methods for Research, *Iowa State, TA*.

Stat 401

2011

Empirical Methods for Computer Science, *Iowa State, TA*.

Stat 430

Mentoring and Advising

2018

Miranda Tilton, *Statistics*, Ph.D.

Footwear Class Characteristics and Computer Vision. Completed MS (Spring 2019).

2019

Jason Seo, *Computer Science and Statistics*, Undergraduate Research.

R package for visualization of neural networks using the python library keras-vis.

2019

Jenny Ha, *Computer Science*, Undergraduate Research.

Database design for storing bullet scans and intermediate analysis products.

2018

Talen Fisher, *Computer Engineering*, Undergraduate Research.

Tools for working with x3p files, database design for storing bullet scans and intermediate analysis products.

2018

Ben Wonderlin and Jenny Kim, *Young Engineers and Scientists*, Summer 2018.

Footwear Class Characteristics and Computer Vision

Service

2019

Gertrude Cox Scholarship Committee Member, ASA.

2017

2019

Graphics Section Representative to the Council of Sections, ASA.