

# 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.
- 10. 2019  
**VanderPlas, S.**, Goluch, R. & Hofmann, H. Framed! Reproducing and Revisiting 150 year old charts. *Journal of Computational and Graphical Statistics*.  
**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. <http://dx.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. ggeanealogy: 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.  
**Contribution:** Writing (75%).
5. 2016  

**Vanderplas, S.** & Hofmann, H. Spatial Reasoning and Data Displays. *IEEE Transactions on Visualization and Computer Graphics*.  
**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. <http://dx.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.
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.
1. 2009  

 Hull, R., Bortfeld, H. & **Koons, S.** Near-infrared spectroscopy and cortical responses to speech production. *The open neuroimaging journal* **3**, 26.

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.**