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

10. 2019 Carriquiry, A., Hofmann, H., Tai, X. H. & **VanderPlas, S.** Machine learning in forensic applications. *Significance* **16,** 29–35.

9. 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%).

8. 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.

7. 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%).

6. 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.

5. 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%).

4. 2016 **Vanderplas**, **S.** & Hofmann, H. Spatial Reasoning and Data Displays. *IEEE Transactions on Visualization and Computer Graphics.*
Contribution: Programming and analysis (90%), writing (75%).

3. 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%).

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

Visual Inference for Bayesians Examine two-target statistical lineups and the connection to Bayes Factors.

Longitudinal Shoe Database Design a database for sharing longitudinal shoe wear data, including powder prints, 2D scans, 3D scans, pictures, and crime-scene style casts and prints.

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

2018–2019 `bulletxtrctr`, *automated matching of 3d bullet scans.*

2018–2019 `x3ptools`, *Reading, manipulating, and visualizing x3p files.*

2018 `bulletsamplr`, *Resampling of bullet signatures.*

2018 `ImageAlignR`, *Image registration algorithms for forensics.*

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*, MS Creative Component.
Footwear Class Characteristics and Computer Vision. Expected graduation: 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*.