

Susan Vanderplas

Curriculum Vitae

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🌐 [svanderplas](https://svanderplas.github.io)

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

- 9. 2019
Rutter, L., VanderPlas, S., Cook, D. & Graham, M. ggenealogy: An R Package for Visualizing Genealogical Data. *Journal of Statistical Software* **89**, 1–31. ISSN: 1548-7660. <https://www.jstatsoft.org/v089/i13>.
- 8. 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%).

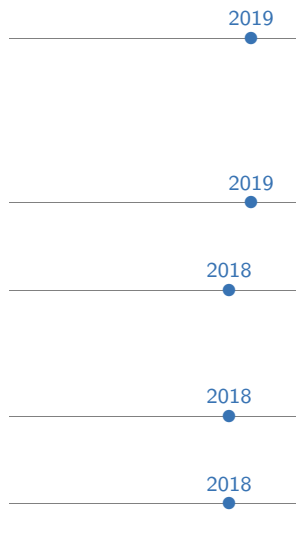
7. 2019
Sievert, C., **VanderPlas, S.**, Cai, J., Ferris, K., Khan, F. U. F. & Hocking, T. D. Extending ggplot2 for linked and animated web graphics. *Journal of Computational and Graphical Statistics* **28**, 299–308. <https://doi.org/10.1080/10618600.2018.1513367>.
6. 2017
Vanderplas, S. & Hofmann, 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%).
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. <https://doi.org/10.1080/10618600.2017.1385474>.
Contribution: Writing (75%).
4. 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%).
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. <https://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. <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>.

Other Publications

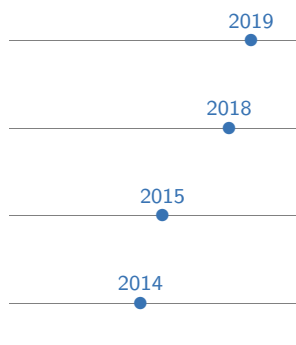
2. 2019
Carriquiry, A., Hofmann, H., Tai, X. H. & **VanderPlas, S.** Machine learning in forensic applications. *Significance* **16**, 29–35. <https://doi.org/10.1111/j.1740-9713.2019.01252.x>.
1. 2013
Budrus, S., Vanderplas, S. & Cook, D. In tennis, do smashes win matches? *Significance* **10**, 35–38. <https://doi.org/10.1111/j.1740-9713.2013.00665.x>.

- In Progress **A Convolutional Neural Network for Outsole Recognition** Use CNNs to automate identification of class characteristics in images of footwear outsoles. Submitted to Forensic Science International, July 2019.
- Testing Statistical Charts: What makes a good graph?** A review of research relating to the testing of statistical graphics across different domains and disciplines. Submitted to Annual Reviews, June 2019.
- Firearms Examination** (Book Chapter) An overview of statistical methods for firearms examination. Submitted July 2019; Under Review.
- Bullet Test Set Validation** Validate an algorithm for bullet matching on several test sets used to test forensic examiner proficiency. To be submitted to Forensic Science International, August 2019.
- Visual Inference for Bayesians** Visual Inference analyses for Bayesians, including estimation of the selection probability of null plots.
- 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 Signature Resampling** Method for resampling bullet signatures used to calculate match and non-match score distributions.

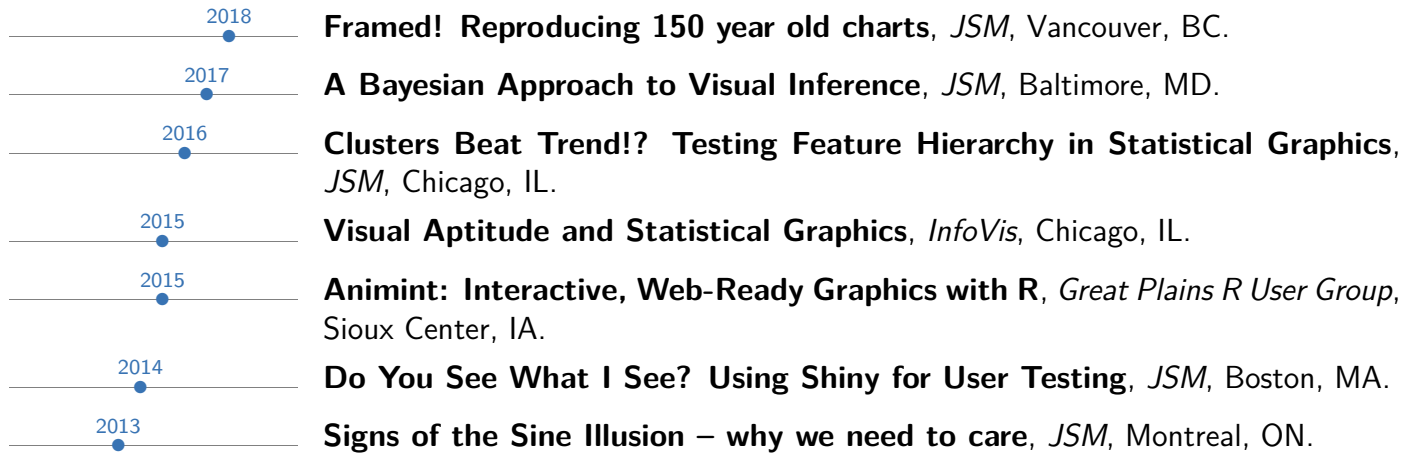
Grants

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- A vertical timeline on the left side of the Grants section, with blue dots marking the years 2019, 2019, 2018, 2018, and 2018. Horizontal lines extend from each dot to the right, aligning with the grant entries.
- 2019 **USDA National Institute of Food and Agriculture**, *Understanding Opioid Risks in Rural and Micropolitan Communities: Economic Restructuring, Social Disorganization, and Local Responses.*, PI, Award number: 2018-68006-27640. Funded for FY 2018-2021, \$498,401.00.
- 2019 **NIJ R&D in Forensic Science**, *Automatic Acquisition and Identification of Footwear Class Characteristics*, PI, Under review (Submitted April 2019) \$386,984.
- 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.

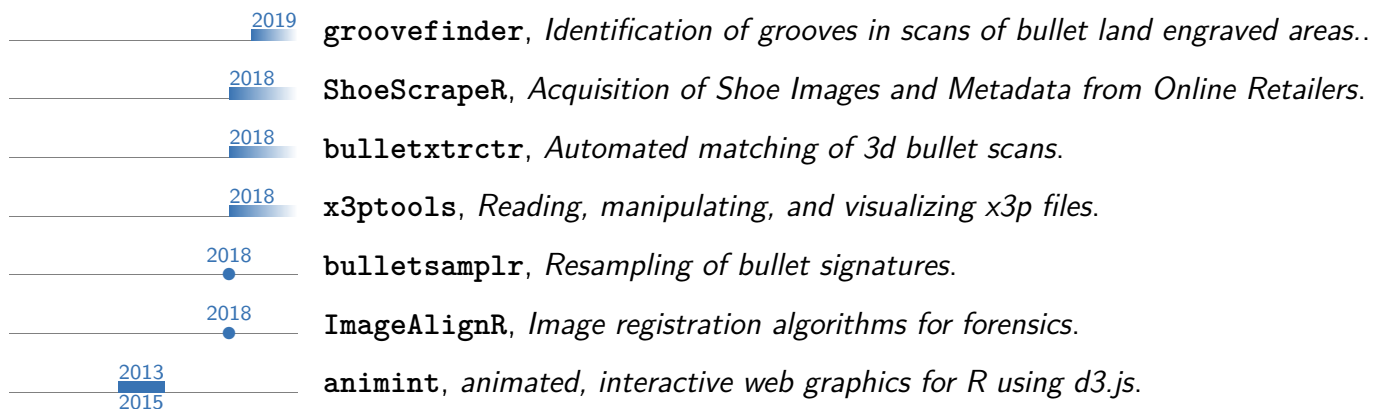
Invited Talks

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- A vertical timeline on the left side of the Invited Talks section, with blue dots marking the years 2019, 2018, 2015, and 2014. Horizontal lines extend from each dot to the right, aligning with the talk entries.
- 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



Software



Teaching



Mentoring and Advising

Graduate Students

2018

Miranda Tilton, *Statistics*, Ph.D.

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

2019

Charlotte Roiger, *Statistics*, MS.

Detection of Topological Features of Bullet Lands using Computer Vision. Estimated MS completion in Spring 2020. Co-advised with Heike Hofmann.

2019

Joseph Zemmels, *Statistics*, MS.

Analysis and Matching of Cartridge Cases. Estimated MS completion in Summer 2020. Co-advised with Heike Hofmann.

2019

Eryn Blagg, *Statistics*, MS.

Analysis of Wear Development in Three-Dimensional Shoe Scans. Estimated MS completion in Fall 2020.

Undergraduate Students

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.

Summer Research Programs

2019

Molly McDermott and Andrew Maloney, *Research Experience for Undergraduates*, Summer 2019.

Bullet Scan Quality and Machine Learning

2019

Syema Ailia, Emmanuelle Hernandez Morales, Tiger Ji, *Research Experience for Undergraduates*, Summer 2019.

Rapid Quality Control Tools for Confocal Microscopy Scans

2018

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

Footwear Class Characteristics and Computer Vision

Service

2020

Graphics Section Program Chair, ASA.

2019

Uncoast Unconference Organizing Committee, Des Moines, IA.

Organized the first R Uncoast Unconference to bring R developers in flyover country together for a 3-day event. Over 50% of the participants at the conference were women or minorities, and participants included students, academics, and industry R programmers with a variety of experience levels in R programming.

2019

Gertrude Cox Scholarship Committee Member, ASA.

Assisted with selection of the Gertrude Cox Scholarship recipients and honorable mentions.

2017

2019

Graphics Section Representative to the Council of Sections, ASA.