Susan VanderPlas

Curriculum Vitae

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Education

2011–15

Doctor of Philosophy in Statistics, *Iowa State University*.
Dissertation: The Perception of Statistical Graphics

2009–2011

Master of Science in Statistics, *Iowa State University*.

2005–2009

Bachelor of Science, *Texas A&M University*.
Major: Psychology and Applied Mathematical Sciences (Statistics), Minor: Neuroscience

Professional Experience

2018

Research Assistant Professor, *Center for Statistics and Applications in Forensic Evidence*, Iowa State University.

2015
2018

Statistical Analyst, *Nebraska Public Power District*.
Conducted analyses to improve data-driven decision making, including analysis of safety, profitability, and reliability data. Designed the Business Intelligence Embedded Agent program to train employees in statistical programming, data analysis, data visualization, and basic statistical modeling.

2015

Postdoc, *Iowa State University Office of the Vice President for Research*, Ames, IA.
Evaluated the relationship between faculty start-up packages and future productivity.

2014

Consultant.
Developed web applications, interactive data displays, and statistical analyses for clients including the Iowa Soybean Association, ISU Agronomy Labs, and the USDA.
Nitrogen Deficiency in Corn, Crop Yield Forecast

Research Interests

STATISTICAL GRAPHICS & VISUALIZATION
- Visual Inference
- Human Perception
- Interactive Graphics
- Graphics for "Big" Data

DATA SCIENCE & COMPUTING
- Data Mining
- Pattern Recognition
- Computer Vision
- Image Analysis

Teaching

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

Designed a program to mentor employees, providing instruction in data science and opportunities to apply new skills within the company. One-on-one and group mentoring sessions were used to create a sense of community and to reinforce skills learned through online courses.

2017
R Workshop, *Nebraska Public Power District*.
3-day internal course on using R for data analysis.

2013-2014
R Workshops, *Iowa State*, R workshops for the ISU community.

Spring 2013
Statistical Methods for Research, *Iowa State*, Teaching Assistant.

2012-2013
Introduction to Business Statistics II, *Iowa State*, Teaching Assistant.

2011
Statistical Methods for Research, *Iowa State*, Teaching Assistant.
2011
Empirical Methods for Comp. Sci., *Iowa State*, Teaching Assistant.

Scholarship

Publications

2018 **Susan VanderPlas**, Ryan Goluch, and Heike Hofmann. Framed! reproducing 150 year old plots. *Journal of Computational and Graphical Statistics*, 2018.

Carson Sievert, J Cai, **Susan VanderPlas**, F Khan, K Ferris, and Toby Hocking. Extending ggplot2 for linked and dynamic web graphics. *Journal of Computational and Graphical Statistics*, 2018.

2017 **Susan VanderPlas** and Heike Hofmann. Clusters beat trend!? testing feature hierarchy in statistical graphics. *Journal of Computational and Graphical Statistics*, 26(2):231–242, 2017.

Lindsay Rutter, **Susan VanderPlas**, Dianne Cook, and Michelle Graham. ggenealogy: An R package for visualizing genealogical data. *Journal of Statistical Software*, 2017.

Heike Hofmann and **Susan VanderPlas**. All of this has happened before. all of this will happen again: Data science. *Journal of Computational and Graphical Statistics*, 26(4):775–778, 2017.

2016 **Susan VanderPlas** and Heike Hofmann. Spatial reasoning and data displays. *IEEE Transactions on Visualization and Computer Graphics*, 2016.

2015 **Susan VanderPlas** and Heike Hofmann. Signs of the sine illusion - why we need to care. *Journal of Computational and Graphical Statistics*, 24(4):1170–1190, 2015.

2010 Fadi Towfic, **Susan VanderPlas**, Casey A Oliver, Oliver Couture, Christopher K Tuggle, M Heather West Greenlee, and Vasant Honavar. Detection of gene orthology from gene co-expression and protein interaction networks. *BMC bioinformatics*, 11(Suppl 3):S7, 2010.

2009	Rachel Hull, Heather Bortfeld, and **Susan Koons**. Near-infrared spectroscopy and cortical responses to speech production. *The open neuroimaging journal*, 3:26, 2009.
In Progress	**Visual Inference for Bayesians** An examination of two-target statistical lineups as the visual analog of Bayes Factors.
	Truthiness and Statistical Charts Evaluating 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 Resampling bullet signatures for use in the calculation of match statistic null distributions.
	Bullet Test Set Validation Validation of a bullet matching algorithm on several test sets used to characterize forensic examiner proficiency.
	Footwear Class Characteristic Recognition using Neural Networks Using convolutional neural networks to identify class characteristics in images of footwear outsoles. These characteristics form a feature set which can be used for automating footwear identification as well as more advanced statistical modeling.

Invited Talks

2018 **Clusters Beat Trend!? Testing Feature Hierarchy in Statistical Graphics**, *SDSS Invited Session*.

2015 **Animint: Interactive Web-Based Animations Using Ggplot2's Grammar of Graphics**, *JSM Invited Session*.

2014 **The curse of three dimensions: Why your brain is lying to you**, *JSM Student Paper Award Session*.

Contributed Talks

2018 **Framed! Reproducing 150 year old charts**, *JSM Contributed Session*.

2017 **A Bayesian Approach to Visual Inference**, *JSM Contributed Session*.

2016 **Clusters Beat Trend!? Testing Feature Hierarchy in Statistical Graphics**, *JSM Contributed Session*.

2015 **Visual Aptitude and Statistical Graphics**, *InfoVis*.

2015 **Animint: Interactive, Web-Ready Graphics with R**, *Great Plains R User Group*.

2014 **Do You See What I See? Using Shiny for User Testing**, *JSM Panel*.

2013 **Signs of the Sine Illusion – why we need to care**, *JSM Contributed Session*.

Software

2018 `bulletsamplr`, *Resampling of bullet signatures (active development)*.

2018 `ImageAlignR`, *Image registration algorithms for forensics (active development)*.

2018 `bulletxtrctr`, *automated matching of 3d bullet scans (with Heike Hofmann)*.

2013
2015 `animint`, *animated, interactive web graphics for R using d3.js (with Toby Hocking, Carson Sievert)*.

Mentoring and Advising

2018 **Miranda Tilton**, *Statistics*, MS Project.
Footwear Class Characteristics and Computer Vision

2018 **Ben Wonderlin and Jenny Kim**, *Young Engineers and Scientists*, Summer 2018.
Footwear Class Characteristics and Computer Vision

Service

2017 **Graphics Section Representative to the Council of Sections**, *ASA*.
2019