

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

- 2020 **Assistant Professor**, *Statistics Department*, University of Nebraska, Lincoln
- 2018 **Research Assistant Professor**, *Center for Statistics and Applications in Forensic Evidence*, Iowa State University
- 2015 **Statistical Analyst/Consultant**, *Nebraska Public Power District*
- 2015 **Postdoc**, *Iowa State University Office of the Vice President for Research*

Publications

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

- In Progress **Testing in Statistical Graphics** A guide to human testing of the perception of statistical graphics using various experimental methods.
- Perception of Log Scales** Assessment of perception and use of log scales to display exponential growth. 3 manuscripts currently in preparation.
- Bullet Signature Resampling** Method for resampling bullet signatures used to calculate match and non-match score distributions.

Grants

Funded

- 2021 **NIJ: R&D In Forensic Science**, *Automatic Acquisition and Identification of Footwear Class Characteristics*, PI, Total: \$380,650
- 2021 **USDA-NIFA: Agriculture and Food Research Initiative**, *Corn Residue Adaptive Grazing Strategies*, Collaborator, Total: \$300,000
- 2020 **NIST: Center for Statistics and Applications in Forensic Evidence**, *Footwear Class Characteristics and Human Factors*, PI, Total: \$20,000,000, Sub: \$456,930

2021
2023

USDA-NRCS: Conservation Innovation Grant On-Farm Trials, *Improving the Economic and Ecological Sustainability of US Crop Production through On-Farm Precision Experimentation*, PI, Total: \$4,000,000, Sub: \$400,000 (Split between 3 UNL co-PIs)

2020
2023

NSF: Smart and Connected Communities, *Overcoming the Rural Data Deficit to Improve Quality of Life and Community Services in Smart & Connected Small Communities*, PI, Total: \$1,500,000, Sub: \$123,445

2019
2020

NIJ: R&D In Forensic Science, *Statistical Infrastructure for the Use of Error Rate Studies in the Interpretation of Forensic Evidence*, Collaborator, Total: \$197,699, Sub: \$57,596

Not Funded

2022

NIJ: R&D In Forensic Science, *Physical Simulation of Lower Body Biomechanics for Artificial Shoe Wear and Forensics Analysis*, Co-PI, Total: \$299,859, Sub: \$73,693

2020

USDA-NIFA: Agriculture and Food Research Initiative, *Practical Framework to Facilitate Adoption of In-Season N Management Technology in Commercial Fields*, Collaborator, Total: \$300,000

2020

NSF: National Artificial Intelligence Research Institutes, *AI Institute: AgroAI: The Institute for Advancing Agriculture and Food in a Changing World Using AI*, Collaborator, Total: \$20,000,000

2019

USDA-AFRI: Sustainable Agricultural Systems, *A Cyber-Physical System for Data-Intensive Farm Management*, PI, Total: \$3,000,000

2018

NIJ: R&D In Forensic Science, *Evaluating Photogrammetry for 3D Footwear Impression Recovery*, PI, Total: \$281,755

Talks

Invited

2021

How do you define a circle? Perception and Computer Vision Diagnostics, *JSM*, Section on Statistical Graphics, Seattle, WA

2021

Pandemics, Graphics, and Perception of Log Scales, *R Ladies DC*, Washington, DC

2020

Perception and Visual Communication in a Global Pandemic, *Data Science, Statistics, and Visualization*, SAMSI, Online

2020

One of these things is not like the others: Visual Statistics and Testing in Statistical Graphics, *Data Science Symposium*, South Dakota State University, Brookings, SD

2020

Big Data, Big Experiments, and Big Problems, *Plant and Animal Genome*, San Diego, CA

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*, Section on Statistical Graphics, Seattle, WA

2014

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

Contributed

2022

Local Population Footwear Class Characteristics - An End-to-End Pipeline for Automatic Data Acquisition and Analysis, *International Association for Identification Meeting*, Omaha, NE

2022

From Scans to Scores, *International Association for Identification Meeting*, Omaha, NE

2021	Welcome to Forensic Statistics , <i>Data Mishaps Night</i> , Online
2018	Framed Charts in the 1870 Statistical Atlas , <i>JSM</i> , Section on Statistical Graphics, Vancouver, BC, CA
2017	A Bayesian Approach to Visual Inference , <i>JSM</i> , Section on Statistical Graphics, Baltimore, MD
2016	Clusters Beat Trend!? Testing Feature Hierarchy in Statistical Graphics , <i>JSM</i> , Section on Statistical Graphics, Chicago, IL
2015	Visual Aptitude and Statistical Graphics , <i>InfoVis</i> , IEEE, Chicago, IL
2014	Do You See What I See? Using Shiny for User Testing , <i>JSM</i> , Section on Statistical Graphics, Boston, MA
2014	Animint: Interactive, Web-Ready Graphics with R , <i>Great Plains R User Group</i> , Sioux Center, IA
2013	Signs of the Sine Illusion – why we need to care , <i>JSM</i> , Section on Statistical Graphics, Montreal, ON, CA

Seminars

2022	Reproducible Science: Statistics, Forensics, and the Law , <i>Statistics</i> , University of Nebraska - Lincoln, Lincoln, NE
2022	How to make good charts , <i>Complex Biosystems</i> , University of Nebraska - Lincoln, Lincoln, NE
2022	Pandemics, Graphics, and Perception of Log Scales , <i>Math</i> , University of Nebraska - Omaha, Omaha, NE
2022	Automatic Acquisition of Footwear Class Characteristics , <i>Center for Statistical Applications in Forensic Evidence</i> , Online
2021	Pandemics, Graphics, and Perception of Log Scales , <i>NUMBATS</i> , Monash University, Melbourne, Vic, AUS
2021	Exploring Rural Quality of Life Using Data Science and Public Data , <i>QQPM</i> , University of Nebraska - Lincoln, Lincoln, NE
2021	Inconclusive Conclusions: Biases and Consequences , <i>Law and Psychology Brown Bag</i> , University of Nebraska - Lincoln, Lincoln, NE
2021	Visual Statistics: Communication and Graphical Testing , <i>Animal Science</i> , University of Nebraska - Lincoln, Lincoln, NE
2021	How to Make Good Charts , <i>Biological and Systems Engineering GSA</i> , University of Nebraska - Lincoln, Lincoln, NE
2020	Statistical Evaluation of Firearms and Toolmark Evidence , <i>Statistics</i> , University of Nebraska - Lincoln, Lincoln, NE

Software

Dates show initial involvement; only packages which are no longer maintained have end dates.

2021	ggpcp , <i>Generalized parallel coordinate plots</i> , Repository
2020	vinference , <i>Analysis of visual inference experiments</i> , Repository
2019 2021	groovefinder , <i>Identification of grooves in scans of bullet land engraved areas</i> , Repository

2019	cmcR , <i>Automated matching of 3d cartridge case scans using the congruent matching cells algorithm</i> , Repository
2018	bulletxtctr , <i>Automated matching of 3d bullet scans</i> , Repository
2018	x3ptools , <i>Reading, manipulating, and visualizing x3p files</i> , Repository
2018	bulletsamplr , <i>Resampling of bullet signatures</i> , Repository
2018	ShoeScrapeR , <i>Acquisition of shoe images and metadata from online retailers</i> , Repository
2020	
2018	ImageAlignR , <i>Image registration algorithms for forensics</i> , Repository
2021	
2013	animint , <i>Animated, interactive web graphics for R using ggplot2 and d3.js</i> , Repository
2015	

Teaching

2023	STAT 151 , <i>Introduction to Statistical Computing</i> , University of Nebraska - Lincoln, Flipped synchronous
2023	STAT 251 , <i>Data Wrangling</i> , University of Nebraska - Lincoln, Flipped synchronous
2022	STAT 151 , <i>Introduction to Statistical Computing</i> , University of Nebraska - Lincoln, Flipped synchronous. Evals: 4.95 (mean), 5 (median)
2022	STAT 218 , <i>Introduction to Statistics</i> , University of Nebraska - Lincoln, Online asynchronous. Evals: 3.72 (mean), 4 (median)
2022	STAT 850 , <i>Computing Tools for Statisticians</i> , University of Nebraska - Lincoln, Flipped synchronous
2022	STAT 892 , <i>Writing in Statistics/TA Prep</i> , University of Nebraska - Lincoln, In person synchronous
2022	STAT 982 , <i>Advanced Inference</i> , University of Nebraska - Lincoln, Co-taught with Bertrand Clarke
2021	STAT 218 , <i>Introduction to Statistics</i> , University of Nebraska - Lincoln, Online asynchronous.. Evals: 4.01 (mean), 4 (median)
2021	STAT 850 , <i>Computing Tools for Statisticians</i> , University of Nebraska - Lincoln, Hybrid, flipped, synchronous. Evals: 4.79 (mean), 5 (median)
2020	STAT 218 , <i>Introduction to Statistics</i> , University of Nebraska - Lincoln, Initially in person synchronous, then online asynchronous. Evals: 4.20 (mean), 4 (median)
2020	STAT 850 , <i>Computing Tools for Statisticians</i> , University of Nebraska - Lincoln, Hybrid, flipped, synchronous. Evals: 4.76 (mean), 5 (median)
2019	STAT 585 , <i>Data Technologies for Statistical Analysis</i> , Iowa State, Co-taught with Heike Hofmann. Evals: 4.92 (mean), 5 (median)

Mentoring and Advising

Ph.D.

2023	Tyler Wiederich , <i>University of Nebraska - Lincoln</i> , Perception of Three Dimensional Graphics
2023	Muxin Ha , <i>University of Nebraska - Lincoln</i> , Automatic Recognition of Shoe Class Characteristics
2022	Weihao (Patrick) Li , <i>Monash University</i> , Advances in Artificial Intelligence for Data Visualization: Developing Computer Vision Models to Automate Reading of Data Plots, with Application to Predictive Model Diagnostics, co-advised with Dianne Cook and Emi Tanaka
2021	Rachel Rogers , <i>University of Nebraska - Lincoln</i> , Explainable Machine Learning for Forensics in Courtrooms

2021

Denise Bradford, *University of Nebraska - Lincoln*, Dashboards for Exploratory Multivariate Data Analysis

2022

Zeinab Mohammed, *University of Nebraska - Lincoln*, committee member

2023

2020

2023

Alison Kleffner, *University of Nebraska - Lincoln*, Spatial Statistics and Visualization in Ecology and Agriculture, co-advised with Yawen Guan

2020

2023

Joseph Zemmels, *Iowa State University*, Analysis and Matching of Cartridge Cases, co-advised with Heike Hofmann

2020

2022

Emily Robinson, *University of Nebraska - Lincoln*, Perception of Log Scales, co-advised with Reka Howard

MS

2023

Charles Bonk, *University of Nebraska - Lincoln*, Reproducibility in Firearms and Toolmark Algorithms

2023

2022

Tyler Wiederich, *University of Nebraska - Lincoln*, Perception of Three Dimensional Graphics

2023

2022

Muxin Ha, *University of Nebraska - Lincoln*, Automatic Recognition of Shoe Class Characteristics

2021

2022

Jayden Stack, *University of Nebraska - Lincoln*, Automatic Recognition of Shoe Class Characteristics

2020

Ved Piyush, *University of Nebraska - Lincoln*, Machine Learning and Computer Vision

2019

2020

Joseph Zemmels, *Iowa State University*, Analysis and Matching of Cartridge Cases, co-advised with Heike Hofmann

2019

2020

Eryn Blagg, *Iowa State University*, Analysis of Wear Development in Three-Dimensional Shoe Scans, co-advised with Heike Hofmann

2018

2019

Miranda Tilton, *Iowa State University*, Footwear Class Characteristics and Computer Vision

Undergraduate

2021

Xinyu Liu, *University of Nebraska - Lincoln*, Machine Learning for Shoe Sole Images, UNL FYRE Program

2019

Jason Seo, *Iowa State University*, R package for visualization of neural networks using the python library keras-vis

2018

2019

Talen Fisher, *Iowa State University*, Database engineering and tools for working with x3p files

Summer

2019

Molly McDermott and Andrew Maloney, *Iowa State University*, Bullet Scan Quality and Machine Learning

2019

Syema Ailia, Emmanuelle Hernandez Morales, Tiger Ji, *Iowa State University*, Rapid quality control tools for confocal microscopy scans

2018

Ben Wonderlin, Jenny Kim, *Iowa State University*, Footwear Class Characteristics and Computer Vision, Young Engineers and Scientists Program

Outreach

Legal Briefs and Testimony

2023

Written Testimony, *Federal District Court - Northern District of Florida (Pensacola)*, US v. Quinton Pete, 3:22cr48/TKW

2022

Amicus Curiae Brief, *Supreme Court of New Jersey*, A-56-18 State v. Michael Olenowski (082253)

2022

Amicus Curiae Brief, *Supreme Court of Maryland*, In Support of Appellant Kobina Ebo Abruquah

2022

Written Testimony, *Cook County Circuit Court*, Reply to Response by FBI Laboratory filed in Illinois v. Winfield and Affidavit by Biederman et al. (2022) filed in US v. Kaevon Sutton (2018 CF1 009709)

2021

Written Testimony, *Cook County Circuit Court*, Assessment of the Reliability of Studies of Firearms Examination in Forensics

Forensic Practitioners

2021

Blog Post, *CSAFE*, Q&A - Treatment of Inconclusive Results in Error Rates of Firearm Studies ([Link](#))

2021

Webinar, *CSAFE*, Treatment of Inconclusive Results in Error Rates of Firearm Studies

2020

CSAFE Firearms Workshop, Invited Talk: Open Source Software in Forensics

Service

Service to the Discipline

2023

Advisory Committee on Forensic Science, ASA

2025

2023

Graphics Section Chair, ASA

2024

2022

Graphics Section Chair-Elect, ASA

2023

2021

Associate Editor, *Journal of Computational and Graphical Statistics*

2024

2020

Associate Editor, *R Journal*

2023

2020

Graphics Section Program Chair (2021), ASA, Official duties include planning JSM sessions in 2020 and running the Data Expo in 2022

2022

2020

Program Committee (Graphics), *Symposium on Data Science and Statistics 2020*, Visualization Track co-chair

2019

Gertrude Cox Scholarship Committee Member, ASA

2021

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

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.

2017

2019

Graphics Section Representative to the Council of Sections, ASA

Reviewing

I have reviewed papers for JCGS, IEEE InfoVis, R Journal, JASA, The American Statistician, Forensic Science International, Law Probability and Risk, Forensic Sciences Research, and Symmetry.

Department and Institutional Service

2021

R Workshop Coordinator

Develop and coordinate a week of R workshops taught in January, and May each year

2021 2022	Faculty Senate, <i>Statistics Department Representative</i>
2021 2022	Faculty Advisory Council, <i>Vice-Chair</i>
2021 2022	MS Comp Exam Committee Committee to evaluate the current MS Stat Day presentation component and consider other options for the MS program
2021	Digital Ag Minor Committee Committee to develop a digital ag minor
2021	Data Science Joint Committee Committee of Math, Computer Science, and Statistics departments to develop a comprehensive undergraduate data science program
2020 2021	Seminar Organizer Arrange speakers for the department seminar
2020	SCIL 101 Poster Judge, <i>Fall Semester</i>
2019 2020	Undergraduate Program Committee Design an undergraduate statistics major and submit the proposal to the university
Training & Professional Development	
2022 2023	Nebraska Governance and Technology Center, <i>Faculty Fellow</i>
2021 2022	Peer Review of Teaching Program Create a course portfolio for Stat 850 in order to assess course design and analyze student engagement and learning
2020	New Faculty Development Program
2020	Summer Institute for Online Teaching Online course structure and backwards design principles