Barret Schloerke

data[c("wrangler", "explorer", "visualizer")]

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Education

2013
PhD Statistics, *Purdue University*, West Lafayette, IN
Advisor: Dr. William Cleveland and Dr. Ryan Hafen,
Anticipated graduation: Mid-Fall 2017

2013
2014
Masters of Science in Mathematical Statistics, *Purdue University*, West Lafayette, IN,
GPA: 3.69

2012
2012
Student for PhD of Statistics, *Rice University*, Houston, TX
Advisor: Dr. Hadley Wickham

2006
2010
Bachelor of Science in Computer Engineering, *Iowa State University*, Ames, IA
GPA: 3.77

Honors and Awards

2015/2
Visiting Scientific Researcher, *Transportation and lodging*, Collaboration with NUMBAT,
Monash Business Analytics Team - Department of Econometrics and Business Statistics
Monash University - Melbourne, Victoria, Australia

2015/2
Visiting Scientific Researcher, *Transportation and lodging*, Workshop on Visualization for Big
Data: Strategies and Principles

2012
2017
National Science Foundation Graduate Research Fellowship, *Three-year fellowship*, The NSF
Graduate Research Fellowship Program recognizes and supports outstanding graduate students in
NSF-supported science, technology, engineering, and mathematics disciplines who are pursuing
research-based Master's and Doctoral degrees at accredited United States institutions.

2011/6
Best Dynamic / Interactive Visualization, *Data Insight (SF)*

2011/4
National Science Foundation Graduate Research Fellowship, *Honorable mention*

2010/12
Magna Cum Laude, *Graduated with GPA greater than 3.70*

2008
2010
Eta Kappa Nu Honor Society, *EE/CprE Honor Society for top 25% of class*

2006
2010
Dean's List, *Achieving a 3.5 or above for a semester*

2006
2010
Engineering Merit Scholarship, *Achieving at least a 3.50 GPA in the College of Engineering*

2006
2010
President's Award for Competitive Excellence, *For High School Excellence and Second in class
rank*

Publications

Journal Articles

2017 Schloerke, B., H. Wickham, D. Cook, H. Hofmann. "Escape from Boxland: Generating a Library of High-Dimensional Geometric Shapes." *R Journal* Accepted. Print.

2013 Emerson, J., W. Green, B. Schloerke, J. Crowley, D. Cook, H. Hofmann, and H. Wickham "The Generalized Pairs Plot." *Journal of Computational and Graphical Statistics* 22.1 (2013). Print.

2012 Hofmann H., D. Cook, C. Kielion, B. Schloerke, J. Hobbs, A. Loy, L. Mosley, D. Rockoff, Y. Huang, D. Wrolstad, and T. Yin "Delayed, Canceled, on Time, Boarding. . . Flying in the USA." *Journal of Computational and Graphical Statistics* 20.2 (2012). Print.

2010 Mosley, L., D. Cook, H. Hofmann, C. Kielion, and B. Schloerke. "Monitoring the 2008 Election Visually." *Chance* 23.3 (2010). Print.

Presentations

2016/8 Schloerke, B. "Cognostics: Metrics enabling detailed interactive visualization of big data" Joint Statistical Meeting. Chicago, IL. Aug. 2016. Speech.

2016/6 Schloerke, B. "ggduo: Pairs plot for two group data" UseR!2016. Stanford University, Stanford, CA. Jun. 2016. Speech.

2016/6 Schloerke, B. "High Performance Computing for High-Resolution Analysis of Big Data and Small" Spring Research Conference. Illinois Institute of Technology, Chicago, IL. Jun. 2016. Speech.

2016/2 Schloerke, B. "GraphQL: An R server implementation". Wombat2016. Melbourne Zoo, Melbourne, VIC AUS. Feb. 2016. Speech.

2015/10 Schloerke, B. "Web Scraping with R" American Credit Acceptance. Spartanburg, SC. Oct. 2015. Speech.

2015/2 Schloerke, B. "Trelliscope: D&R visualization tool" Big Data Visualization. Fields Institute Toronto, CAN. Feb. 2015. Speech.

2014/10 Schloerke, B. "ggplot2: displaying spatial and temporal data" Spatial Statistics Seminar. Recitation, West Lafayette, IN. Oct. 2014. Speech.

2014/2 Schloerke, B. "Reducing Working Environment Inefficiencies" Graduate Statistics Seminar. Haas, West Lafayette, IN. Feb. 2014. Speech.

2010/9 Schloerke, B. "helpr: Help for R." Working Group Meeting. Snedecor Hall, Ames, IA. Sept. 2010. Speech.

2010/8 Schloerke, B. "GGally: A Plot Matrix for All Variable Types." Joint Statistical Meeting 2010. Vancouver Convention Center, Vancouver, BC Canada. Aug. 2010. Speech.

2009/6 Quart, G., B. Schloerke, and D. Gannon. "Visualizing Large Data Sets: Housing Crisis." VIGRE. Rice University, Houston, TX. June 2009. Speech.

Talks

2016 / **2016** **"Analysis and Visualization of Large Complex Data with Tessera"**
- Purdue Graduate Statistics Seminar - West Lafayette, IN - Apr. 2016
- Iowa State University Graphics Research Group - Ames, IA - Mar. 2016
- Monash University NUMBAT Seminar - Melbourne, VIC AUS - Feb. 2016

2014/6 **"git"**, Purdue Working Group

2011 / **2011** **"Sinartra: Simple Web Framework"**, **"5 Tips for Running Node in Production"**, **"Express: Node Router"**, San Francisco Bay Area

2008 / **2011** **"Roxygen: Documentation for R"**, **"helpr: Help for R"**, and **"Electoral Towers"**, Iowa State University Working Group

Research

Purdue University

Advisors: Dr. Ryan Hafen and Dr. William Cleveland

2015 trelliscopejs, *browser data visualization*

- Ported original trelliscope R package to be separated from shiny
- Full visual implementation in javascript dramatically increases interaction time
- Utilized React.js javascript platform to produce a single webpage application with multiple URLS

2015 GraphQL, *query language for your API*

- GraphQL is a query language for APIs and a runtime for fulfilling those queries with your existing data. GraphQL provides a complete and understandable description of the data in your API, gives clients the power to ask for exactly what they need and nothing more, makes it easier to evolve APIs over time, and enables powerful developer tools.
- Native R GraphQL implementation to be used with Relay.js as a go-between the browser and a R data backend

2016 rbokeh, *R interface to Bokeh*
2016

- A native R plotting library that provides a flexible declarative interface for creating interactive web-based graphics, backed by the Bokeh visualization library.
- Utilized non-standard evaluation within package to remove massive amounts of boilerplate

2016 GGally::ggduo, *plot matrix for two grouped data*
2016

- Pairs plot for two group data
- Extension of ggpairs built on top of a ggmatrix object
- Readily useful for multiple time series analysis and canonical correlation analysis
- Foundation function for 'ggduo', a model diagnostic plot matrix, and 'ggts', a time series plot matrix

2015 GGally::ggmatrix, *generalized plot matrix*
2016

- Handles arbitrary plot columns and rows
- Used as display mechanism for all GGally plot matrix functions

2013 Bitcoin, *DARPA XDATA*
2013

- Brought previous transaction exporter up to protocol
- Formatted escrow transactions to be matched easier
- Made "None" keys uniquely identifiable, rather than being treated the same
- Matched some "None" keys to valid output keys
- Updated User exporter to include all information available

Rice University

Advisor: Dr. Hadley Wickham

Summer 2010 helpr, *Help for R*

- Betters Friendly HTML documentation with links to other packages, function aliases, and function sources. Finding information may be done with the comprehensive search bar.

Summer 2009 VIGRE Program

- Performed exploratory analysis on the housing crisis
- Found, cleaned, and explored multiple data sets
- Created all outputs reproducible from scratch

Novartis Pharmaceutical

Mentors: Dr. Francois Mercier and Dr. Anthony Rossini

Summer 2008 Novartis Pharmaceutical R&D

- Created a time management tool using gantt charts to help management quickly display availability.
- Created a web-based tutorial consisting of examples of the most common graphics produced when using different layouts. This allowed users to know exactly how everything was being displayed. (white-box)
- Worked cohesively with the top 15 statisticians within Novartis.

Iowa State University Statistics Research

Advisors: Dr. Dianne Cook and Dr. Heike Hofmann

2010

GGally R package, *Extension of ggplot2*

- Re-designed the scatterplot matrix within ggplot2 to handle other variable types
- Users may submit custom functions to be displayed in the plot matrix
- Collaborated with over 9 contributing authors
- > 18k downloads a month
- Barret Schloerke, Dr. Wickham, Dr. Cook, Dr. Hofmann, Dr. Hafen
- Iowa State University, Purdue University

2010

cranvas, *New Plotting Canvas for R*

- New plotting canvas for R. Produces more than a million points in less than a second.
- Dr. Wickham, Dr. Lawrence, Dr. Hoffman, Dr. Cook, Yihui Xie, Tengfei Yin, Marie Vendettuoli, Barret Schloerke

2009

DescribeDisplay, *Reproduce GGobi images in R*

- Produce publication quality graphics from GGobi's describe display plugin.

2009

tourr, *Geodesic interpolation and basis generation functions*

- Implements geodesic interpolation and basis generation functions that allow you to create new tour methods in R.
- Dr. Wickham, Dr. Cook, Barret Schloerke
- Iowa State University and Rice University

2009

American Statistical Association Data Expo, *Delayed, Cancelled, On-Time, Boarding ... Flying in the USA*

- Displayed airport delays caused by airport layout using multiple applications.
- Using Google's KML language, R and wget, we produced Google Earth images with the runways highlighted.
- Iowa State University working group finished 2nd in the world competition.

2008

Election Data, *Explore new ways to show the Electoral College for the 2008 Presidential Election*

- Created a custom cartogram of the United States with area proportional to the electoral vote of each state.
- Produced the 'Electoral Vote Towers' (inspired by New York Times 2000 Presidential Race) that quickly portrayed the electoral vote status.

2008

DNA, *Viewing DNA sequence data*

- Extension of the polytope ranking.
- Created combinations of DNA sequences with a length of four which were displayed in a grand tour.

2008

Polytope Ranking, *Visualizing ranked data*

- Created a model that would connect a ranked data set.
- Added jittered data points to each combination with the distance relative to the amount of points.

2007

FaceOff, *'Lines and Dots' in the fourth dimension*

- Game created to calibrate users into viewing and thinking in the fourth dimension.
- Game is a combination of "Connect 4", "Tic Tac Toe", and "Dots and Lines."

2007

IEEE Infovis Competition, *2007 Infovis visualization competition*

- Internet Movie Data Base (IMDB) competition.
- Worked on the genres of the database using the "Many Eyes" web application.
- Helped edit and produce the movie that the working group submitted.

2007

GeoZoo, *A library of high dimension geometric objects*

- Functions to produce cubes, spheres, simplices, polyhedra, polytops, tori, and mobius-like objects.
- Contains a new addition to the high dimension polytopes, a Hyper Ring Torus

Work Experience

Bill and Melinda Gates Foundation Consultant

2016 **Tool Development Team**

Metamarkets - San Francisco, CA

2011
2012 **Software Engineer**

Client-Side	Server-Side
○ Developed url framework	○ Learned and implemented Node.js
○ Created the javascript foundation from scratch	○ Developed / forked multiple public packages
○ Utilized DVL and D3 to make visualizations and objects data dependant	○ Developed user management system
○ Modularized the code to make it useable in multiple locations	○ Developed / utilized user configuration file
○ Sped up deployment of code and utilized browser caching	○ Allowed user configuration to work with self serve process
○ Minimized calls to backend server to avoid excessive load	○ Maintained client security
	○ Implemented custom server cluster to prevent request failure
	○ Merged multiple data sources per request
	○ Wrote custom security check and error notification system

2011
2012 **DVL**, *Data Visualization Legos*

Functionally reactive javascript library to bind data to functions and visualizations

2012
2012 **yalog**, *Yet Another Logger*

Request logger to allow for personalized logging messages within different log levels

R Master Class Assistant

Instructor: Hadley Wickham

2015/6 **Chicago, IL**, *"Package Development in R"*, 50 people

2011/6 **San Francisco, CA**, *"Advanced Programming Techniques"* and *"Package Development in R"*, 40 people

Service

Graduate Office / Leadership Positions

2016
2017 **Graduate Student Office President**, *Statistics*
- ○ Organize Graduate Stent Mentor Program
- ○ Organize Esteemed Speaker event Spring semester
- ○ Run elections for the following year

2014
2016 **StatCom Assistant**
- ○ Coordinated and put on multiple events
- ○ Helped in production of StatCom banner

2014
2016 **Graduate Student Mentor**

Undergraduate Office / Leadership Positions

2007
2010 **Iowa State University Hip Hop Club (Dub H)**, *Technology Chair and Executive Committee*
- ○ Made club self sustaining
- ○ Plan, execute, and review all events
- ○ Produce videos and DVDs for club

2007
2010 **GRIP Mentoring**, *Leader/Friend*

Met with and provided guidance for a middle school student in Gilbert, IA

2010
2010 **Greek Week Check-In**, *Electronic Check-in for Events*
- ○ Managed a system with more than 2300 records for 10+ events
- ○ Linked to participants Iowa State University identification card

2009
2010

Eta Kappa Nu
- Organized event to inform middle school students what a Computer Engineer does at Iowa State University - Service Chair - Spring 2010
- Oversaw the meetings and made certain that the events were run properly - Vice President - Spring 2009

2007
2009

FarmHouse Fraternity, *Scholarship Chair*
- Implemented five new programs to strengthen GPA
- Moved committee chair into an executive position

2007
2007

E-Ball Subcommittee, *Committee Member*
- Planned dance event for 800 people
- Specialized in food selection

References

Dr. William Cleveland
Professor
Statistics, Purdue University
✉ wsc@purdue.edu

Dr. Ryan Hafen
Hafen Consulting
Adjunct, Purdue University
✉ rhafen@gmail.com

Dr. Hadley Wickham
Data Scientist
RStudio
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Dr. Dianne Cook
Professor
Monash Univeristy
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Dr. Heike Hofmann
Professor
Iowa State University
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Dr. Michael Driscoll
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