

Barret Schloerke

(Permanent)
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Education

Purdue University West Lafayette, Indiana

PhD of Statistics	Advisors: Dr. William Cleveland & Dr. Ryan Hafen	Transferred: Spring 2013 Anticipated: Spring 2017
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Purdue University West Lafayette, Indiana

Masters of Mathematical Statistics	GPA: 3.69	Transferred: Spring 2013 Graduated: Fall 2014
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Rice University Houston, Texas

Student for PhD of Statistics	Advisor: Dr. Hadley Wickham	Fall 2012
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Iowa State University Ames, Iowa

Bach. of Sci. in Computer Engineering	GPA: 3.77	Graduated: December 2010
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Honors and Awards

Award	Description	Date
Visiting Scientific Researcher	Received full funding for Workshop on Visualization for Big Data: Strategies and Principles	Spring 2015
National Science Foundation Graduate Research Fellowship	3 year fellowship grant recipient	Spring 2012
Best Dynamic / Interactive Visualization	Data Insight (SF)	June 2011
National Science Foundation Graduate Research Fellowship	Honorable mention	Spring 2011
Magna Cum Laude	Graduate with GPA greater than 3.70	Fall 2010
Eta Kappa Nu Honor Society	Being in top 25% of class EE/CprE Honor Society	Inducted in Fall 2008
Dean's List	Achieving a 3.5 or above for a semester	Fall 2006 - Fall 2010
Engineering Merit Scholarship	College of Engineering Achieving at least a 3.50 GPA	Fall 2006 - Spring 2010
President's Award for Competitive Excellence	For High School Excellence 2nd in class rank	Fall 2006 - Spring 2010

Publications

Journal Articles

- 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.
- 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.
- Mosley, L., D. Cook, H. Hofmann, C. Kielion, and B. Schloerke. “[Monitoring the 2008 Election Visually](#).” *Chance* 23.3 (2010). Print.
- Schloerke, B., H. Wickham, D. Cook, H. Hofmann. “Escape from Boxland: Generating a Library of High-Dimensional Geometric Shapes.” *R Journal* In progress. Print.

Presentations

- Schloerke, B. “Cognostics: Metrics enabling detailed interactive visualization of big data” Joint Statistical Meeting. Chicago, IL. Aug. 2016. Speech.
- Schloerke, B. “ggduo: Pairs plot for two group data” UseR!2016. Stanford University, Stanford, CA. Jun. 2016. Speech.
- 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.
- Schloerke, B. “[GraphQL: An R server implementation](#)”. Wombat2016. Melbourne Zoo, Melbourne, VIC AUS. Feb. 2016. Speech.
- Schloerke, B. “Web Scraping with R” American Credit Acceptance. Spartanburg, SC. Oct. 2016. Speech.
- Schloerke, B. “Trelliscope: D&R visualization tool” Big Data Visualization. Fields Institute Toronto, CAN. Feb. 2015. Speech.
- Schloerke, B. “ggplot2: displaying spatial and temporal data” Spatial Statistics Seminar. Recitation, West Lafayette, IN. Oct. 2014. Speech.
- Schloerke, B. “Reducing Working Environment Inefficiencies” Graduate Statistics Seminar. Haas, West Lafayette, IN. Feb. 2014. Speech.
- Schloerke, B. “helpr: Help for R.” Working Group Meeting. Snedecor Hall, Ames, IA. Sept. 2010. Speech.
- Schloerke, B. “GGally: A Plot Matrix for All Variable Types.” Joint Statistical Meeting 2010. Vancouver Convention Center, Vancouver, BC Canada. Aug. 2010. Speech.
- Quart, G., B. Schloerke, and D. Gannon. “Visualizing Large Data Sets: Housing Crisis.” VIGRE. Rice University, Houston, TX. June 2009. Speech.

Talks

- “[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, Iowa - Mar. 2016
 - Monash University NUMBAT Seminar - Melbourne, VIC AUS - Feb. 2016
- Purdue working group (2014): “git”

- Bay Area (2011): “Sinartra: Simple Web Framework”, “5 Tips for Running Node in Production”, “Express: Node Router”
- ISU working group (2008-2010): “Roxygen: Documentation for R”, “helpr: Help for R”, and “Electoral Towers”

Research

Purdue University

- **GGally::ggduo**: - Spring 2016 - Summer 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
- **trelliscopejs**: - Spring 2015 - Present
 - 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
- **Bitcoin**: DARPA XDATA - Summer 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 VIGRE Program

Summer 2009

- Performed exploratory analysis on the housing crisis
- Found, cleaned, and explored multiple data sets
- Created all outputs reproducible from scratch
- Supervised by Dr. Hadley Wickham

Novartis Pharmaceutical

Summer 2008

- 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 coherently with the top 15 statisticians within Novartis.
- Supervised by Dr. Anthony Rossini and Mentored by Dr. Francois Mercier.

ISU Statistics Research

Summer 2007 to Fall 2010

- Supervised by Dr. Dianne Cook and Dr. Heike Hofmann
- **2009 American Statistical Association Data Expo:** Delayed, Cancelled, On-Time, Boarding ... Flying in the USA - Spring 2009
 - 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](#).
- **Election Data:** Explore new ways to show the Electoral College for the 2008 Presidential Election - Fall 2008
 - 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.
- **DNA:** Viewing DNA sequence data - Fall 2008
 - Extension of the polytope ranking.
 - Created combinations of DNA sequences with a length of four which were displayed in a grand tour.
- **Polytope Ranking:** Visualizing ranked data - Spring 2008
 - 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.
- **FaceOff:** 'Lines and Dots' in the fourth dimension - 2007
 - 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."
- **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.

Work Experience

Bill and Melinda Gates Foundation Consultant

Tool Development Team - Spring 2016 - Fall 2016

Metamarkets - San Francisco, CA

Software Engineer - Spring 2011 - Summer 2012

Client-Side	Server-Side
<ul style="list-style-type: none">• Developed url framework• Created the javascript foundation from scratch• Utilized D3 and D3 to make visualizations and objects data dependant• Modularized the code to make it useable in multiple locations• Sped up deployment of code and utilized browser caching• Minimized calls to backend server to avoid excessive load	<ul style="list-style-type: none">• Learned and implemented Node.js• Developed / forked multiple public packages• Developed user management system• Developed / utilized user configuration file• Allowed user configuration to work with self serve process• Maintained client security• Implemented custom server cluster to prevent request failure• Merged multiple data sources per request• Wrote own security check and error notification system

R Master Class Assistant

- Class assistant to Hadley Wickham
- Two day course covering “Advanced Programming Techniques” and “Package Development in R”
- San Francisco, CA. June 2011.
- Chicago, IL. June 2015.

Open Source

R Packages

- [GGally](#) ggplot2's Best Friend - Spring 2010 - Present
 - 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
 - > 10k downloads a month
 - Barret Schloerke, Dr. Wickham, Dr. Cook, Dr. Hofmann, Dr. Hafen
 - Iowa State University, Purdue University
- [graphqlr](#) GraphQL for R - Fall 2015 - Spring 2016

- Native R GraphQL implementation to be used with Relay.js as a go-between the browser and a R data backend
 - Barret Schloerke, Dr. Hafen
 - Purdue University
- **rbokeh** R interface to Bokeh - Fall 2015
 - Utilized non-standard evaluation within package to remove massive amounts of boilerplate
 - Barret Schloerke, Dr. Hafen
 - Purdue University
- **cranvas** New Plotting Canvas for R - 2010
 - 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
 - Iowa State University
- **helpR** Help for R - Summer 2010
 - Better Friendly HTML documentation with links to other packages, function aliases, and function sources. Finding information may be done with the comprehensive search bar.
 - Barret Schloerke, Dr. Wickham
 - Rice University and Revolution Analytics
- **DescribeDisplay** Reproduce GGobi images in R - Fall 2009
 - Produce publication quality graphics from GGobi's describe display plugin.
 - Barret Schloerke
 - Iowa State University
- **tourR** Geodesic interpolation and basis generation functions - Fall 2009
 - 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
- **GeoZoo** A library of high dimension geometric objects - 2007
 - 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
 - Barret Schloerke, Dr. Cook
 - Iowa State University
- Contributions
 - ggmcmc
 - lintr
 - pryr

Node.js / Javascript

- [yalog](#) Yet Another Logger - 2012
 - Request logger to allow for personalized logging messages within different log levels
 - Barret Schloerke
- [DVL](#) Data Visualization Legos - 2011-2012
 - Functionally reactive javascript library to bind data to functions and visualizations
 - Vadim Ogievetsky, Barret Schloerke

Interface

- **R-Touch:** R on the iPod Touch / iPhone - 2009
 - Application allows the user to perform on-the-fly coding, produce images, download data from the Internet, restore old code files, and save current executed code. The coding session may then be viewed on a computer using the session ID.
 - Barret Schloerke, Chris Kielion
 - Iowa State University

Websites

- **Checkin System** Implemented a database management system for Iowa State's [Greek Olympics](#) (2010 - 2015) and [Iowa State's Homecoming Blood Drive](#) (2012-2013) to keep tabs on participants. Allowed for an average checkin time of 1 person every 2 seconds over a two hour period.
- **HelpR** [HelpR](#) R package is written using [sinartra](#) which allows for embedding R in HTML when the page is generated. 2010
- **Senior Design** [Senior Design](#) project description with links to meeting minutes and team documents. 2010
- **Election Maps** [Election Maps](#) includes two sections: Cartogram of the USA and Electoral Vote Towers. 2009
- **Novartis Toolbox** [Toolbox](#) designed for generating standard statistical graphics in R. The mission of the website is to give the user the tools to learn basic and advanced Lattice skills through examples. 2008
- **GeoZoo** [GeoZoo](#) was created to help the viewer's eyes calibrate to high dimensions. GeoZoo contains many data sets of high dimensional geometric shapes. 2007
- **FaceOff** [FaceOff](#)'s video and PDF tutorial. 2007

Service

Graduate Office / Leadership Positions

- **Graduate Student Office President:** (Statistics) 2017-18
 - Organize Graduate Stent Mentor Program
 - Organize Esteemed Speaker event Spring semester
 - Run elections for the following year

- **StatCom Assistant:** 2015-16, 2016-17
 - Coordinated and put on multiple events
 - Helped in production of StatCom banner
- **Graduate Student Mentor:** 2014-15, 2015-16, 2016-17

Undergraduate Office / Leadership Positions

- **Iowa State University Hip Hop Club (Dub H):** Technology Chair and Executive Committee - 2007 to 2010
 - Made club self sustaining
 - Plan, execute, and review all events
 - Produce videos and DVDs for club
- **GRIP Mentoring:** Leader/Friend - Fall 2007 to Spring 2010
 - Met with and provided guidance for a middle school student in Gilbert, IA
- **Greek Week Check-in:** Electronic Check-in for Events Spring 2010
 - Managed a system with more than 2300 records for 10+ events
 - Linked to participants ISU card
- **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
- **FarmHouse Fraternity:** Scholarship Chair - Fall 2007 to Spring 2009.
 - Implemented five new programs to strengthen GPA
 - Moved committee chair into an executive position
- **E-Ball Subcommittee:** Committee Member - Spring/Fall 2007
 - Planned dance event for 800 people
 - Specialized in food selection

Graduate Coursework

Fall 2012 - Rice University

Stat 431	Overview of Math Stat	3.0	B
Stat 615	Intro to Reg & Comput	3.0	A-
Stat 621	Applied TS & Forecasting	3.0	A-
Stat 601	Statistics Colloquium	1.0	A
Stat 405	Intro to Data Analysis		TA

Summer 2013

Stat 598	Qualifier Prep Course	3.0	A
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Fall 2013

Stat 532	Elem Stochastic Proc	3.0	B-
Stat 545	Intro Comp Statistics	3.0	A
Stat 598	New Student Seminar	1.0	A
Stat 695	Recent Dev In Bays Anlys	3.0	A

Summer 2014

Stat 598	Qualifier Prep Course	3.0	A
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Fall 2014

Stat 514	Design Of Experiment	3.0	A-
Stat 598	Spatial Statistics	3.0	A+
Stat 695	R/RHIPE/Hadoop	3.0	A+
Stat 699	Research PhD Thesis	2.0	S

Summer 2015

Stat 598	Qualifier Prep Course	3.0	A
Stat 699	Research PhD Thesis	6.0	S

Fall 2015

Stat 598	Spatial Statistics Seminar	1.0	S
Stat 699	Research PhD Thesis	12.0	S

Spring 2013 - Purdue University

Stat 519	Intro To Probability	3.0	B+
Stat 526	Adv Stat Methodology	3.0	B+
Stat 528	Intro Math Stat	3.0	A-
Stat 692	Statistics Seminar	1.0	P

Spring 2014

Stat 546	Computational Statistics	3.0	B+
Stat 553	Linear Models	3.0	A-
Stat 598	Functional Data Analysis	3.0	A+
Stat 692	Statistics Seminar	1.0	P

Spring 2015

Stat 598	Bioinformatic/Stat Gen	1.0	A
Stat 695	Visualizing Lg Complex Data	3.0	A+
Stat 699	Research PhD Thesis	14.0	S

Spring 2016

Stat 598	Spatial Statistics Seminar	1.0	
Stat 699	Research PhD Thesis	8.0	

Personal Contacts

- [Dr. William Cleveland. wsc@purdue.edu](mailto:wsc@purdue.edu)
- [Dr. Ryan Hafen. rhafen@gmail.com](mailto:rhafen@gmail.com)
- [Dr. Hadley Wickham. h.wickham@gmail.com](mailto:h.wickham@gmail.com)
- [Dr. Dianne Cook. dicook@monash.edu](mailto:dicook@monash.edu)
- [Dr. Heike Hofmann. hofmann@iastate.edu](mailto:hofmann@iastate.edu)
- [Dr. Michael Driscoll. mike@metamarkets.com](mailto:mike@metamarkets.com)