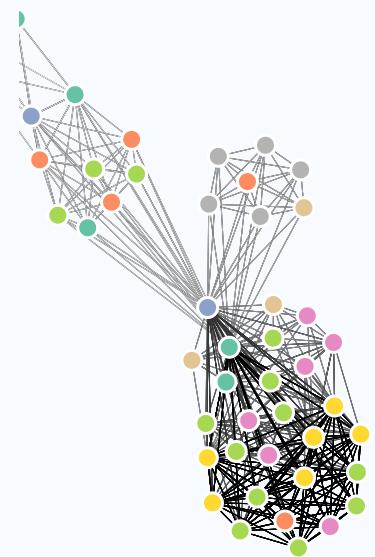


SHIYA LIU

I have made visualizations viewed by hundreds of thousands of people¹, sped up query times for 25 terabytes of data by an average of 4,800 times², and built packages for R³ that let you do magic⁴.



EDUCATION

2020
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2015

- **PhD. Candidate, Biostatistics**
Vanderbilt University 📍 Nashville, TN
 - Focused on network models & interactive visualization platforms for electronic health records data
 - University Graduate Fellow
- **B.S., Mathematics, Statistics (minor C.S.)**
University of Vermont 📍 Burlington, VT
 - Thesis: An agent based model of Diel Vertical Migration patterns of Mysis diluviana

View this CV online with links at shiyaliu/cv/

RESEARCH EXPERIENCE

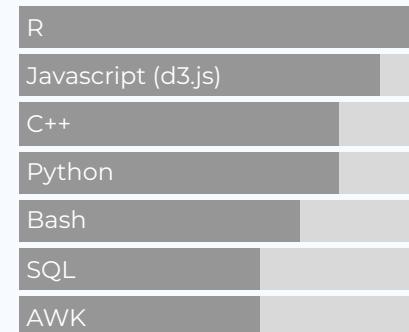
Current
|
2015

- **Graduate Research Assistant**
TBILab (Yaomin Xu's Lab) 📍 Vanderbilt University
 - Primarily working with large EHR and Biobank datasets.
 - Developing network-based methods to investigate and visualize clinically relevant patterns in data.
- **Data Science Researcher**
Data Science Lab 📍 Johns Hopkins University
 - Building R Shiny applications in the contexts of wearables and statistics education.
 - Work primarily done in R Shiny and Javascript (node and d3js).
- **Undergraduate Researcher**
Rubenstein Ecosystems Science Laboratory 📍 University of Vermont
 - Analyzed and visualized data for CATOS fish tracking project.
 - Head of data mining project to establish temporal trends in population densities of Mysis diluviana (Mysis).
 - Ran project to mathematically model the migration patterns of Mysis (honors thesis project.)

CONTACT

- ✉ nick.strayer@gmail.com
- 🐦 [NicholasStrayer](#)
- 🔗 [github.com/nstrayer](#)
- 🔗 [nickstrayer.me](#)
- 🔗 [linkedin.com/in/nickstrayer](#)

LANGUAGE SKILLS



Made with the R package [pagedown](#).

The source code is available on github.com/nstrayer/cv.

Last updated on 2022-12-22.

2015 2015	Human Computer Interaction Researcher LabInTheWild (Reineke Lab)	📍 University of Michigan
2014 2013	Undergraduate Researcher Bentil Laboratory	📍 University of Vermont
2013 2012	Research Assistant Adair Laboratory	📍 University of Vermont
	• Led development and implementation of interactive data visualizations to help users compare themselves to other demographics.	
	• Developed mathematical model to predict the transport of sulfur through the environment with applications in waste cleanup.	
	• Independently analyzed and constructed statistical models for large data sets pertaining to carbon decomposition rates.	

📘 INDUSTRY EXPERIENCE

Current 2020	Software Engineer RStudio	📍 Remote
	• Helping make programming web applications with R easier and more beautiful on the Shiny team	
2016 2016	Data Journalist - Graphics Department New York Times	📍 New York, New York
	• Reporter with the graphics desk covering topics in science, politics, and sport.	
	• Work primarily done in R, Javascript, and Adobe Illustrator.	
2015 2015	Engineering Intern - User Experience Dealer.com	📍 Burlington, VT
	• Built internal tool to help analyze and visualize user interaction with back-end products.	
2015 2015	Data Science Intern Dealer.com	📍 Burlington, VT
	• Worked with the product analytics team to help parse and visualize large stores of data to drive business decisions.	
2015 2014	Data Artist In Residence Conduce	📍 Carpinteria, CA
	• Envisioned, prototyped and implemented visualization framework in the course of one month.	
	• Constructed training protocol for bringing third parties up to speed with new protocol.	

I have worked in a variety of roles ranging from journalist to software engineer to data scientist. I like collaborative environments where I can learn from my peers.

2014
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2014

- **Software Engineering Intern**
Conduce 📍 Carpinteria, CA
 - Incorporated d3.js to the company's main software platform.



TEACHING EXPERIENCE

2020

- **Javascript for Shiny Users**
RStudio::conf 2020
 - Served as TA for two day workshop on how to leverage Javascript in Shiny applications
 - Lectured on using R2D3 package to build interactive visualizations.⁵

2019
|
2019

- **Data Visualization Best Practices**
DataCamp
 - Designed from bottom up course to teach best practices for scientific visualizations.
 - Uses R and ggplot2.
 - In top 10% on platform by popularity.

2019
|
2019

- **Improving your visualization in Python**
DataCamp
 - Designed from bottom up course to teach advanced methods for enhancing visualization.
 - Uses python, matplotlib, and seaborn.

2018
|
2017

- **Advanced Statistical Learning and Inference**
Vanderbilt Biostatistics Department 📍 Nashville, TN
 - TA and lectured
 - Topics covered from penalized regression to boosted trees and neural networks
 - Highest level course offered in department

2018
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2018

- **Advanced Statistical Computing**
Vanderbilt Biostatistics Department 📍 Nashville, TN
 - TA and lectured
 - Covered modern statistical computing algorithms
 - 4th year PhD level class

2017
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2017

- **Statistical Computing in R**
Vanderbilt Biostatistics Department 📍 Nashville, TN
 - TA and lectured
 - Covered introduction to R language for statistics applications
 - Graduate level class

I am passionate about education. I believe that no topic is too complex if the teacher is empathetic and willing to think about new methods of approaching task.

SELECTED DATA SCIENCE WRITING

2019

- **Using AWK and R to Parse 25tb⁷**

LiveFreeOrDichotomize.com

- Story of parsing large amounts of genomics data.
- Provided advice for dealing with data much larger than disk.
- Reached top of HackerNews.

I regularly blog about data science and visualization on my blog LiveFreeOrDichotomize.⁶

2018

- **Classifying physical activity from smartphone data⁸**

RStudio Tensorflow Blog

- Walk through of training a convolutional neural network to achieve state of the art recognition of activities from accelerometer data.
- Contracted article.

2018

- **The United States of Seasons⁹**

LiveFreeOrDichotomize.com

- GIS analysis of weather data to find the most 'seasonal' locations in United States
- Used Bayesian regression methods for smoothing sparse geospatial data.

2017

- **A year as told by fitbit¹⁰**

LiveFreeOrDichotomize.com

- Analyzing a full years worth of second-level heart rate data from wearable device.
- Demonstrated visualization-based inference for large data.

2017

- **MCMC and the case of the spilled seeds¹¹**

LiveFreeOrDichotomize.com

- Full Bayesian MCMC sampler running in your browser.
- Coded from scratch in vanilla Javascript.

2017

- **The Traveling Metallurgist¹²**

LiveFreeOrDichotomize.com

- Pure javascript implementation of traveling salesman solution using simulated annealing.
- Allows reader to customize the number and location of cities to attempt to trick the algorithm.

SELECTED PRESS (ABOUT)

2017

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2017

- **Great paper? Swipe right on the new <U+2018>Tinder for preprints<U+2019> app¹³**

Science

- Story of the app Papr¹⁴ made with Jeff Leek and Lucy D<U+2019>Agostino McGowan.

- 2017 | 2017
- **Swipe right for science: Papr app is <U+2018>Tinder for preprints<U+2019>¹⁵**
Nature News
 - Second press article for app Papr.
- 2016 | 2016
- **The Deeper Story in the Data¹⁶**
University of Vermont Quarterly
 - Story on my path post graduation and the power of narrative.

[selected press (by)]

- 2016 | 2016
- **The Great Student Migration¹⁷**
The New York Times
 - Most shared and discussed article from the New York Times for August 2016.
- 2016 | 2016
- **Wildfires are Getting Worse, The New York Times¹⁸**
The New York Times
 - GIS analysis and modeling of fire patterns and trends
 - Data in collaboration with NASA and USGS
- 2016 | 2016
- **Who<U+2019>s Speaking at the Democratic National Convention?¹⁹**
The New York Times
 - Data scraped from CSPAN records to figure out who talked and past conventions.
- 2016 | 2016
- **Who<U+2019>s Speaking at the Republican National Convention?²⁰**
The New York Times
 - Used same data scraping techniques as Who<U+2019>s Speaking at the Democratic National Convention?
- 2016 | 2016
- **A Trail of Terror in Nice, Block by Block²¹**
The New York Times
 - Led research effort to put together story of 2016 terrorist attack in Nice, France in less than 12 hours.
 - Work won Silver medal at Malofiej 2017, and gold at Society of News and Design.



SELECTED PUBLICATIONS, POSTERS, AND TALKS

2020

- **Building a software package in tandem with machine learning methods research can result in both more rigorous code and more rigorous research**

ENAR 2020

- Invited talk in Human Data Interaction section.
- How and why building an R package can benefit methodological research

2020

- **Stochastic Block Modeling in R, Statistically rigorous clustering with rigorous code²²**

RStudio::conf 2020

- Invited talk about new sbmR package²³.
- Focus on how software development and methodological research can improve both benefit when done in tandem.

2020

- **PheWAS-ME: A web-app for interactive exploration of multimorbidity patterns in PheWAS²⁴**

Bioinformatics

- Manuscript detailing application for the exploration of multimorbidity patterns in PheWAS analyses
- See landing page²⁵ for more information.

2019

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2019

- **Charge Reductions Associated with Shortening Time to Recovery in Septic Shock²⁶**

Chest

- Authored with Wesley H. Self, MD MPH; Dandan Liu, PhD; Stephan Russ, MD, MPH; Michael J. Ward, MD, PhD, MBA; Nathan I. Shapiro, MD, MPH; Todd W. Rice, MD, MSc; Matthew W. Semler, MD, MSc.

2019

|
2019

- **Multimorbidity Explorer | A shiny app for exploring EHR and biobank data²⁷**

RStudio::conf 2019

- Contributed Poster. Authored with Yaomin Xu.

2019

|
2019

- **Taking a network view of EHR and Biobank data to find explainable multivariate patterns²⁸**

Vanderbilt Biostatistics Seminar Series

- University wide seminar series.

2019

- **Patient-specific risk factors independently influence survival in Myelodysplastic Syndromes in an unbiased review of EHR records**

Under-Review (copy available upon request.)

- Bayesian network analysis used to find novel subgroups of patients with Myelodysplastic Syndromes (MDS).
- Analysis done using method built for my dissertation.

- 2019
- **Patient specific comorbidities impact overall survival in myelofibrosis**
Under-Review (copy available upon request.)
 - Bayesian network analysis used to find robust novel subgroups of patients with given genetic mutations.
 - Analysis done using method built for my dissertation.
- 2018
|
2018
- **R timelineViz: Visualizing the distribution of study events in longitudinal studies**
Under-Review (copy available upon request.)
 - Authored with Alex Sunderman of the Vanderbilt Department of Epidemiology.
- 2017
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2017
- **Continuous Classification using Deep Neural Networks²⁹**
Vanderbilt Biostatistics Qualification Exam
 - Review of methods for classifying continuous data streams using neural networks
 - Successfully met qualifying examination standards
- 2015
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2015
- **Asymmetric Linkage Disequilibrium: Tools for Dissecting Multiallelic LD**
Journal of Human Immunology
 - Authored with Richard Single, Vanja Paunic, Mark Albrecht, and Martin Maiers.
- 2015
|
2015
- **An Agent Based Model of Mysis Migration³⁰**
International Association of Great Lakes Research Conference
 - Authored with Brian O'Malley, Sture Hansson, and Jason Stockwell.
- 2015
|
2015
- **Declines of Mysis diluviana in the Great Lakes**
Journal of Great Lakes Research
 - Authored with Peter Euclide and Jason Stockwell.

🔗 LINKS

- 1: <https://www.nytimes.com/interactive/2016/08/26/us/college-student-migration.html>
- 2: https://livefreeordichotomize.com/2019/06/04/using_awk_and_r_to_parse_25tb/
- 3: <https://github.com/nstrayer/shinysense>
- 4: <http://nickstrayer.me/dataDayTexas/>
- 5: http://nickstrayer.me/js4shiny_r2d3/slides
- 6: <https://livefreeordichotomize.com/>
- 7: https://livefreeordichotomize.com/2019/06/04/using_awk_and_r_to_parse_25tb/
- 8: <https://blogs.rstudio.com/tensorflow/posts/2018-07-17-activity-detection/>
- 9: <https://livefreeordichotomize.com/2018/02/12/the-united-states-of-seasons/>
- 10: <https://livefreeordichotomize.com/2017/12/27/a-year-as-told-by-fitbit/>
- 11: <https://livefreeordichotomize.com/2017/10/14/mcmc-and-the-case-of-the-spilled-seeds/>

- 12: <https://livefreeordichotomize.com/2017/09/25/the-traveling-metallurgist/>
- 13: <https://www.sciencemag.org/news/2017/06/great-paper-swipe-right-new-tinder-preprints-app>
- 14: <https://jhubiostatistics.shinyapps.io/papr/>
- 15: <https://www.nature.com/news/swipe-right-for-science-papr-app-is-tinder-for-preprints-1.22163>
- 16: <https://www.uvm.edu/uvmnews/news/deeper-story-data>
- 17: <https://www.nytimes.com/interactive/2016/08/26/us/college-student-migration.html?smid=pl-share>
- 18: <https://www.nytimes.com/interactive/2016/07/25/us/wildfire-seasons-los-angeles.html>
- 19: <https://www.nytimes.com/2016/07/26/upshot/democrats-may-not-be-unified-but-their-convention-speakers-are.html>
- 20: <https://www.nytimes.com/2016/07/19/upshot/whos-not-speaking-how-this-republican-convention-differs.html?smid=pl-share>
- 21: <https://www.nytimes.com/interactive/2016/07/14/world/europe/trail-of-terror-france.html>
- 22: http://nickstrayer.me/rstudioconf_sbm
- 23: <https://tbilab.github.io/sbmR/>
- 24: <https://academic.oup.com/bioinformatics/advance-article-abstract/doi/10.1093/bioinformatics/btaa870/5922817?redirectedFrom=fulltext>
- 25: https://prod.tbilab.org/phewas_me_info/
- 26: <https://www.ncbi.nlm.nih.gov/pubmed/30419234>
- 27: http://nickstrayer.me/rstudioconf19_me-poster/
- 28: http://nickstrayer.me/biostat_seminar/
- 29: http://nickstrayer.me/qualifying_exam/
- 30: <https://www.semanticscholar.org/paper/An-Agent-Based-Model-of-the-Diel-Vertical-Migration-Strayer-Stockwell/40493c78e8ecf22bd882d17ec99fd913ec4b9820>