SARAH ARCOS

As a software developer I use my background in data science to build tools to help people explore, understand, and work with their data better. I have made visualizations viewed by hundreds of thousands of people[1], sped up query times for 25 terabytes of data by an average of 4,800 times[2], and built packages for R[3] that let you do magic[4].

EDUCATION

2020

PhD., Biostatistics

Vanderbilt University — Nashville, TN

- Disertation: Network analysis and visualization for electronic health records data.[5]
- Focused on network models & interactive visualization platforms for electronic health records data

2015

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

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.

2018 | 2017

Data Science Researcher

Data Science Lab — Johns Hopkins University

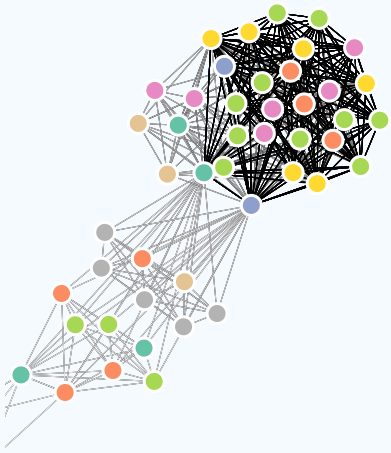
- Building R Shiny applications in the contexts of wearables and statistics education.
- Work primarily done in R Shiny and Javascript (node and d3js).

2015 | 2013

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.)



View this CV online with links at *data/*

CONTACT

nick.strayer@gmail.com
NicholasStrayer
github.com/nstrayer
nickstrayer.me
linkedin.com/in/nickstrayer

LANGUAGE SKILLS

- Typescript
- R
- Python
- C++
- Bash
- SQL
- AWK

*Made with the R package **pagedown**.*

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

Last updated on 2024-10-22.

2015

Human Computer Interaction Researcher

LabInTheWild (Reineke Lab) — University of Michigan

- Led development and implementation of interactive data visualizations to help users compare themselves to other demographics.

2014 | 2013

Undergraduate Researcher

Bentil Laboratory — University of Vermont

- Developed mathematical model to predict the transport of sulfur through the environment with applications in waste cleanup.

2013 | 2012

Research Assistant

Adair Laboratory — University of Vermont

- Independently analyzed and constructed statistical models for large data sets pertaining to carbon decomposition rates.

INDUSTRY EXPERIENCE

Current | 2024

Principal Software Engineer

Posit — Remote

- Working on all things up and down the stack of the Positron data science IDE.

2024 | 2023

Senior Software Engineer

Posit — Remote

- Creator and lead developer of the ShinyUiEditor low-code tool for building Shiny applications with a drag-and-drop interface

2023 | 2020

Software Engineer

Posit — Remote

- Helping make programming web applications with R easier and more beautiful on the Shiny team
- Helped create and release Shiny for Python. A ground-up rewrite of the Shiny app development platform for Python.

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

Engineering Intern - User Experience

Dealer.com — Burlington, VT

- Built internal tool to help analyze and visualize user interaction with back-end products.

While most recently I have had the job title of "software engineer", I have worked in a variety of roles ranging from journalist to data scientist. Ultimately categorization is hard.

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.

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.[6]

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

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

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.

2018

Advanced Statistical Computing

Vanderbilt Biostatistics Department — Nashville, TN

- TA and lectured
- Covered modern statistical computing algorithms
- 4th year PhD level class

2017

Statistical Computing in R

Vanderbilt Biostatistics Department — Nashville, TN

- TA and lectured
- Covered introduction to R language for statistics applications
- Graduate level class

SELECTED DATA SCIENCE WRITING

2019

Using AWK and R to Parse 25tb[8]

LiveFreeOrDichotomize.com

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

2018

Classifying physical activity from smartphone data[9]

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 Seasons[10]

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 fitbit[11]

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 seeds[12]

LiveFreeOrDichotomize.com

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

I regularly blog about data science and visualization on my blog LiveFreeOrDichotomize.[7]

2017

The Traveling Metallurgist[13]

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

Great paper? Swipe right on the new 'Tinder for preprints' app[14]

Science

- Story of the app Papr[15] made with Jeff Leek and Lucy D'Agostino McGowan.

2017

Swipe right for science: Papr app is 'Tinder for preprints'[16]

Nature News

- Second press article for app Papr.

2016

The Deeper Story in the Data[17]

University of Vermont Quarterly

- Story on my path post graduation and the power of narrative.

SELECTED PRESS (BY)

2016

The Great Student Migration[18]

The New York Times

- Most shared and discussed article from the New York Times for August 2016.

2016

Wildfires are Getting Worse, The New York Times[19]

The New York Times

- GIS analysis and modeling of fire patterns and trends
- Data in collaboration with NASA and USGS

2016

Who's Speaking at the Democratic National Convention?[20]

The New York Times

- Data scraped from CSPAN records to figure out who talked and past conventions.

2016

Who's Speaking at the Republican National Convention?[21]

The New York Times

- Used same data scraping techniques as Who's Speaking at the Democratic National Convention?

2016

A Trail of Terror in Nice, Block by Block[22]

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 code[23]

RStudio::conf 2020

- Invited talk about new sbmR package[24].
- 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 PheWAS[25]

Bioinformatics

- Manuscript detailing application for the exploration of multimorbidity patterns in PheWAS analyses
- See landing page[26] for more information.

2019

Charge Reductions Associated with Shortening Time to Recovery in Septic Shock[27]

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

Multimorbidity Explorer | A shiny app for exploring EHR and biobank data[28]

RStudio::conf 2019

- Contributed Poster. Authored with Yaomin Xu.

2019

Taking a network view of EHR and Biobank data to find explainable multivariate patterns[29]

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

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

Continuous Classification using Deep Neural Networks[30]

Vanderbilt Biostatistics Qualification Exam

- Review of methods for classifying continuous data streams using neural networks
- Successfully met qualifying examination standards

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

An Agent Based Model of Mysis Migration[31]

International Association of Great Lakes Research Conference

- Authored with Brian O'Malley, Sture Hansson, and Jason Stockwell.

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: https://ir.vanderbilt.edu/handle/1803/16394?show=full

6: http://nickstrayer.me/js4shiny_r2d3/slides
7: https://livefreeordichotomize.com/
8: https://livefreeordichotomize.com/2019/06/04/using_awk_and_r_to_parse_25tb/
9: https://blogs.rstudio.com/tensorflow/posts/2018-07-17-activity-detection/
10: https://livefreeordichotomize.com/2018/02/12/the-united-states-of-seasons/
11: https://livefreeordichotomize.com/2017/12/27/a-year-as-told-by-fitbit/
12: https://livefreeordichotomize.com/2017/10/14/mcmc-and-the-case-of-the-spilled-seeds/
13: https://livefreeordichotomize.com/2017/09/25/the-traveling-metallurgist/
14: https://www.sciencemag.org/news/2017/06/great-paper-swipe-right-new-tinder-preprints-app
15: https://jhubiostatistics.shinyapps.io/papr/
16: https://www.nature.com/news/swipe-right-for-science-papr-app-is-tinder-for-preprints-1.22163
17: https://www.uvm.edu/uvmnews/news/deeper-story-data
18: https://www.nytimes.com/interactive/2016/08/26/us/college-student-migration.html?smid=pl-share
19: https://www.nytimes.com/interactive/2016/07/25/us/wildfire-seasons-los-angeles.html
20: https://www.nytimes.com/2016/07/26/upshot/democrats-may-not-be-unified-but-their-convention-speakers-are.html
21: https://www.nytimes.com/2016/07/19/upshot/whos-not-speaking-how-this-republican-convention-differs.html?smid=pl-share
22: https://www.nytimes.com/interactive/2016/07/14/world/europe/trail-of-terror-france.html
23: http://nickstrayer.me/rstudioconf_sbm
24: https://tbilab.github.io/sbmR/
25: https://academic.oup.com/bioinformatics/advance-article-abstract/doi/10.1093/bioinformatics/btaa870/5922817?redirectedFrom=fulltext
26: https://prod.tbilab.org/phewas_me_info/
27: https://www.ncbi.nlm.nih.gov/pubmed/30419234
28: http://nickstrayer.me/rstudioconf19_me-poster/
29: http://nickstrayer.me/biostat_seminar/
30: http://nickstrayer.me/qualifying_exam/
31: https://www.semanticscholar.org/paper/An-Agent-Based-Model-of-the-Diel-Vertical-Migration-Strayer-Stockwell/40493c78e8ecf22bd882d17ec99fd913ec4b9820