






TAINÁ ROCHA


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
- 2015
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2011
- **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
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2015
- **Graduate Research Assistant**
TBI Lab (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
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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
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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.)

 [Download this resume in PDF.](#)

SOFTWARE

-  [Package {dados}](#) - Co-Author.
-  [Package {mananciais}](#) - Author, maintainer.

TEACHING

-  [tidyverse certified trainer by RStudio.](#)
-  [The Carpentries instructor.](#)

PROGRAMMING SKILLS

-  R
-  tidyverse
-  Git
-  GitHub
-  Markdown
-  HTML
-  CSS

This resume was made with the R package [pagedown](#) and [datadrivencv](#).

Code available on  [GitHub](#).

Last updated on 2021-07-13. The most recent version of this resume is [available here](#).

- 2015
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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
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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
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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
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2020
 - Software Engineer**
 RStudio
 - Remote
 - Helping make programming web applications with R easier and more beautiful on the Shiny team
- 2016
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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
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2015
 - Engineering Intern - User Experience**
 Dealer.com
 - Burlington, VT
 - Built internal tool to help analyze and visualize user interaction with back-end products.
- 2015
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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
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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
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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
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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
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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.
- 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.

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



SELECTED PRESS (ABOUT)

- 2017 | 2017 ● [Great paper? Swipe right on the new 'Tinder for preprints' app¹³](#)
Science
 - Story of the app Papr¹⁴ made with Jeff Leek and Lucy D'Agostino McGowan.

- 2017
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2017
 - [Swipe right for science: Papr app is 'Tinder for preprints'](#)¹⁵
Nature News
 - Second press article for app Papr.
- 2016
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2016
 - [The Deeper Story in the Data](#)¹⁶
University of Vermont Quarterly
 - Story on my path post graduation and the power of narrative.

SELECTED PRESS (BY)

- 2016
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2016
 - [The Great Student Migration](#)¹⁷
The New York Times
 - Most shared and discussed article from the New York Times for August 2016.
- 2016
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2016
 - [Wildfires are Getting Worse, The New York Times](#)¹⁸
The New York Times
 - GIS analysis and modeling of fire patterns and trends
 - Data in collaboration with NASA and USGS
- 2016
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2016
 - [Who'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
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2016
 - [Who's Speaking at the Republican National Convention?](#)²⁰
The New York Times
 - Used same data scraping techniques as Who's Speaking at the Democratic National Convention?
- 2016
|
2016
 - [A Trail of Terror in Nice, Block by Block](#)²¹
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
|
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 | 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 | 2015 ● **Asymmetric Linkage Disequilibrium: Tools for Dissecting Multiallelic LD**
Journal of Human Immunology
- Authored with Richard Single, Vanja Paunic, Mark Albrecht, and Martin Maier.
- 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>