DAVID ZHANG

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 | 2015

PhD. Candidate, Biostatistics

Vanderbilt University — Nashville, TN

- Focused on network models & interactive visualization platforms for electronic health records data
- University Graduate Fellow

2015 | 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 | 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

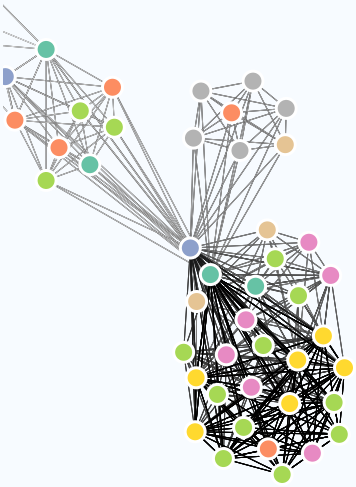
- Analyzed and visualized data for CATOS fish tracking project.
- Head of data mining project to establish temporal trends in population densities of Mysis diluviana (Mysis).
- Ran project to mathematically model the migration patterns of Mysis (honors thesis project.)

2015 | 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.



View this CV online with links at *dzhang32.github.io/cv/*

CONTACT

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dzhang32
david-zhang32

LANGUAGE SKILLS

- R
- Bash
- Git/GitHub
- Python

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

The source code is available on github.com/dzhang32/cv.

Last updated on 2021-02-22.

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 | 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.

2014 | 2014

Software Engineering Intern

Conduce — Carpinteria, CA

- Incorporated d3.js to the company's main software platform.

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.

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 | 2018

Advanced Statistical Computing

Vanderbilt Biostatistics Department — Nashville, TN

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

2017 | 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 25tb[7]

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 data[8]

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[9]

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[10]

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[11]

LiveFreeOrDichotomize.com

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

2017

The Traveling Metallurgist[12]

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 | 2017

Great paper? Swipe right on the new 'Tinder for preprints' app[13]

Science

- Story of the app Papr[14] made with Jeff Leek and Lucy D'Agostino McGowan.

2017 | 2017

Swipe right for science: Papr app is 'Tinder for preprints'[15]

Nature News

- Second press article for app Papr.

2016 | 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 | 2016

The Great Student Migration[17]

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 Times[18]

The New York Times

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

2016 | 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 | 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 code[22]

RStudio::conf 2020

- Invited talk about new sbmR package[23].
- 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[24]

Bioinformatics

- Manuscript detailing application for the exploration of multimorbidity patterns in PheWAS analyses
- See landing page[25] for more information.

2019 | 2019

Charge Reductions Associated with Shortening Time to Recovery in Septic Shock[26]

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 data[27]

RStudio::conf 2019

- Contributed Poster. Authored with Yaomin Xu.

2019 | 2019

Taking a network view of EHR and Biobank data to find explainable multivariate patterns[28]

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 Networks[29]

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 Maiers.

2015 | 2015

An Agent Based Model of Mysis Migration[30]

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