

Daniel W. Kerchner

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I am a Data Scientist, Software Developer, Bioinformatician, and Instructor with over 20 years of software development and project management experience, as well as advanced biostatistics skills. I am currently a PhD student in Health Data Science - Bioinformatics, with research interests in applying artificial intelligence to the analysis of genomic, metabolomic, microbiome, and other omics data. In my current doctoral research, I am applying novel genomic language models (gLMs) to improve omics characterization over traditional, search-based techniques. For the past eight years, I have been a sought-after health data science consultant and instructor both within and beyond GW. As an expert R and Python programmer, I practice and advocate for best practices in collaborative, open and reproducible research. I collaborate on a wide variety of research projects with faculty and students, and this first-hand experience allows me to provide credible instruction when teaching other researchers to empower them with fundamental data and computational skills that they need to grow and succeed in their research endeavors.

Education

Ph.D., Health Data Science, Bioinformatics, George Washington Univ., expected 2028

M.S., Health and Biomedical Data Science, Applied Bioinformatics,
George Washington University, May 2024

M.S., Systems Engineering, University of Virginia, 1996

B.S., Applied and Engineering Physics, Cornell University, 1994

Identifiers

ORCID: orcid.org/0000-0002-5921-2193

Google Scholar: scholar.google.com/citations?user=yQqpgogAAAAJ

GitHub: github.com/kerchner

LinkedIn: www.linkedin.com/in/dankerchner

PubMed: [35114422](https://pubmed.ncbi.nlm.nih.gov/35114422)

Research Experience

2021-Present Weill Cornell Medical College, collaboration with Dr. Nili Solomonov

- Applying a Treatment Decision Rule based framework for optimally assigning patients with late-life depression to psychotherapy vs. usual care.
- Analysis and visualization of depression trajectories of a large cohort of perinatal women.

2013-Present George Washington University

- Doctoral research: Benchmarking and application of Genomic Language Models for taxonomic and functional profiling in human multi-omics microbiome research

- Master of Science project: Association of maternal gestational diabetes mellitus with newborn gut metabolome.
- Machine Learning project: Predictive modeling to identify biomarkers associated with asthma comorbidity using both clinical and airway microbiome data
- Consulting on numerous graduate-level and faculty research projects involving data analysis and visualization, across a wide variety of disciplines.
- Data harmonization to prototype FDA-ARGOS database of reference-grade microbial sequences, in collaboration with Dr. Keith Crandall
- COVID-19 meta-analysis, PRISMA and other projects, advising on R coding, data wrangling, and data visualization, collaborating with Dr. Fouzia Farooq, Dept. of Global Health
- Collaborated with Dr. Hilary Silver, Dept. of Sociology, on geospatial data analysis of DC homeless shelter proposal feedback from local residents, using R.
- Collaborated with Dr. Ethan Litman, GW School of Medicine, to perform data analysis of maternal deliveries before and during COVID-19 pandemic.
- Collaborated with Dr. Bagmi Das, GW School of Education and Human Development, to build data collection for Asian-American/Pacific Islander Mental Health Influencer Study.
- Cross-institutional collaboration led by Dr. David Broniatowski, GW School of Engineering, analyzing and visualizing social media content related to COVID-19.
- Collaborated with two teams of medical students under the guidance of Dr. Marie Borum, providing data collection and guidance on analysis, pertaining to social media discussion around health topics during COVID-19 pandemic.
- Collaborated with the GW Program on Extremism to collect and analyze social media on Twitter and on Telegram in support of various research publications and reports.
- Collaborated with Dr. Babak Bahador, GW School of Media and Public Affairs. Developed text mining and data analysis pipeline to analyze transcript content from political talk shows.

Teaching Experience

2026	Instructor, Data Carpentry Genomics workshop (University of Utah)
2017-2026	Creator and Instructor, multiple workshop series on R for Data Analysis and Visualization, Python for Data Analysis, Statistical Inference in R, Data Visualization, Bash Shell for Researchers, Git/GitHub and more (GWU)
2025	Instructor and Organizer, Data Carpentry Metagenomics workshop (Tel Aviv University)
2025	Instructor and Organizer, Data Carpentry Genomics workshop (GWU)
2024	Instructor and Organizer, Data Carpentry Genomics Workshop (Weizmann Institute of Science, Israel)
2023	Instructor and Organizer, Data Carpentry Metagenomics Workshop (GWU)
2023	Instructor, Data Carpentry Genomics Workshop (Rutgers University)
2023	Teaching Assistant, PUBH 6899, new 3-credit Data Visualization course (R, ggplot2, computational biology)
2022	Instructor and Organizer, Data Carpentry Genomics workshop (GWU)

2022	Instructor, workshops on Python for Data Analysis, R for Data Analysis, workshop series on Statistical Inference in R; Instructor, Python Camp
2021	Adjunct Instructor and creator, PUBH 6851 Introduction to R Programming in Public Health and Biomedical Research (GWU)
2020	Adjunct Instructor and creator, PUBH 6899 Fundamentals of R for Biomedical and Public Health Researchers (GWU)
2018	Instructor, Software Carpentry (Bash Shell, Git, R), Carnegie Mellon University
1995	Teaching Assistant, Decision Analysis, University of Virginia
1994	Teaching Assistant, Introduction to Engineering, University of Virginia
1994	Teaching Assistant, Data Structures and Algorithms, Johns Hopkins University Center for Talented Youth

Professional Experience

George Washington University, Washington, DC, May 2013 – Present

- **SENIOR SOFTWARE DEVELOPER and LIBRARIAN**

Developing open-source web applications and infrastructure supporting digital preservation and archiving, web development, catalog integration, and library information technology. Sharing expertise with students, researchers and faculty by providing consultations and teaching workshops in Python, R, and related topics focused on data skills. Projects include:

Open Access Analytics: Building a data pipeline and executive-level dashboard to track compliance with GW's new Open Access Policy across faculty-authored scholarly publications.

GW ScholarSpace: Primary software developer of GWU's institutional open-access scholarship repository built with Hyrax, Ruby on Rails and other technologies.

The ISIS Files: Primary software developer for Hyrax-based public repository showcasing specialized artifacts.

Social Feed Manager (SFM): Software developer of GWU-developed tool to build collections of social media data for researchers from Twitter and other platforms. SFM was built with Python, Django, PostgreSQL, Docker, APScheduler, RabbitMQ and other technologies. Worked with numerous researchers in the GWU community to build collections of interest using SFM.

- **ADJUNCT INSTRUCTOR**

Co-creator and co-instructor of a new 1-credit course, Introduction to R Programming in Public Health and Biomedical Research (PUBH 6899 / PUBH 6851), offered through The George Washington University - Milken Institute School of Public Health Summer Institute. Delivered this course (online) for Summer 2020 and Summer 2021.

Weill Cornell Medical College, November 2021 – Present

- **DATA SCIENCE/R CODING/BIOSTATISTICS CONSULTANT**

Providing advanced data analysis and visualization services and R coding mentoring and problem-solving consultation services for psychiatry research group performing NIH grant-funded large-scale clinical trial research.

Distributed Solutions, Inc., Reston, VA, 2010 – May 2013

- **SENIOR SOFTWARE PRODUCT MANAGER**
Managed product release cycle, development workflow, and issue triage for AEON acquisition/procurement solution, following a Scrum-based process.
- **CUSTOMER PROGRAM MANAGER**
Working closely with the Department of Justice Office of Justice Programs, led end-to-end process analysis, data migration, configuration, testing and training for new AEON implementation, resulting in on-time initial deployment of the “JPAMS” acquisition management system.
- **SOFTWARE DEVELOPMENT AND QUALITY ASSURANCE MANAGER**
Led, mentored, and supervised software development team of 10-12 developers and software quality assurance team. Served as accessibility compliance analyst.

CACI International / American Management Systems, Fairfax, VA, 2000 - 2010

- **SENIOR PROJECT MANAGER, Library of Congress program**
Managed and hired 30+ staff and contractors including software developers and technical analysts supporting LC projects including World Digital Library, National Digital Newspaper Program, and others. Primary liaison with LC directors.
- **PROGRAM MANAGER AND TECHNICAL ARCHITECT, DoD Office of Economic Adjustment (OEA) program**
Technical architect for integration of Common Access Card authentication, PKI Digital Signature capability, and grants.gov integration. Primary liaison with OEA executives; supervised software development team and testing team.
- **TECHNICAL ARCHITECT / LEAD SOFTWARE DEVELOPER, ComprizonSuite**
Developed Java-based integration of LDAP authentication and PDF rendering capability.
- **TECHNICAL TEAM LEAD / TECHNICAL ARCHITECT, Procurement Desktop-Defense**
Led development of Java-based Web Services integration with data security management system; configuration/policy manager for multiple development and testing environments.
- **TECHNICAL ARCHITECT / LEAD SOFTWARE DEVELOPER, Proc. Desktop-Industry**
Designed and implemented RTF and PDF document rendering and template design capability (Java, XML/XSLT, and third-party software); supervised software development team. Lead data migration analyst on major upgrade. Developed adapter to integrate with external systems.
- **TECHNICAL ARCHITECT AND SOFTWARE DEVELOPER**
Developer of web-based Internet Billing Consolidator product (Java/J2EE); showcased product as sales engineer.

Johns Hopkins University Applied Physics Laboratory, Laurel, MD, 1996 - 2000

- **SENIOR PROFESSIONAL STAFF**
Architect and developer of prototype C++ dynamic linkage of warfighting simulation and logistics simulation; active in integration standards development within simulation community; decision

support expert supporting workshops to achieve consensus on functional requirements for Joint Warfare Simulation software development.

University of Virginia, Charlottesville, VA, 1994 - 1996

- TEACHING ASSISTANT

Taught: Introduction to Systems Engineering; Decision Analysis

Johns Hopkins University Center for Talented Youth, Lancaster, PA, 1994

- TEACHING ASSISTANT

Taught: Data Structures and Algorithms (LISP/Scheme)

Decision-Science Applications, Inc., Arlington, VA, 1990 – 1993 (summers)

- SOFTWARE DEVELOPER

Developed data visualization software (C++/X-Windows); Developed/implemented mathematical algorithms for radar image processing.

Peer-Reviewed Publications

- Solomonov N., **Kerchner D.**, Bein O, et al. Precision Assignment to Psychosocial Interventions for Late-Life Depression: An Automated Treatment Decision Rule. *JAMA Psychiatry*. 2025;82(11):1075–1084. doi.org/10.1001/jamapsychiatry.2025.2518
- Solomonov N., **Kerchner D.**, Dai Y., et al. Prevalence and Trajectories of Perinatal Anxiety and Depression in a Large Urban Medical Center. *JAMA Netw Open*. 2025;8(9):e2533111. doi.org/10.1001/jamanetworkopen.2025.33111
- Bahador B and **Kerchner D.** Hating the other as a cross-cutting issue: assessing the role of media surrogate organizations. In: Livingston S, Miller M, eds. *Connective Action and the Rise of the Far-Right: Platforms, Politics, and the Crisis of Democracy*. Oxford University Press; 2025. doi.org/10.1093/oso/9780197794937.003.0010
- Das, B., Attia, M., Nguyen, C., Chen, Q., **Kerchner, D.**, (2024). Navigating identity and mental health on Instagram: Edu-fluencers in the Asian American Pacific Islander Community. *Journal of Multicultural Counseling and Development*, 1-12. doi.org/10.1002/jmcd.12306
- Litman, E., Yin, T., Nelson, S., Capbarat, E., **Kerchner, D.**, Ahmadzia, H. (2022). Adverse Perinatal Outcomes in a Large US Birth Cohort During the COVID-19 Pandemic. *American Journal of Obstetrics & Gynecology MFM*, 4(3). doi.org/10.1016/j.ajogmf.2022.100577
- Broniatowski D., **Kerchner D.**, Farooq F., Huang X., Jamison A., Dredze M., et al. (2022). Twitter and Facebook posts about COVID-19 are less likely to spread misinformation compared to other health topics. *PLoS ONE* 17(1). doi.org/10.1371/journal.pone.0261768
- Akhtar, A., Naik, K., Rao, V., Garland, V., Cioffi, J., Testa, S., **Kerchner, D.**, & Borum, M. L. (2020). S0198 An Analysis on the Use of Twitter Pertaining to COVID Gastrointestinal Symptoms. *American Journal of Gastroenterology*, 115(1), S68–S68. doi.org/10.14309/01.ajg.0000702840.94944.82

- Garland, V., Tick, M., Naik, K., Carro-Cruz, F., Sohail, F., Khouqeer, A., Raddaoui, L., **Kerchner, D.**, & Borum, M. L. (2020). S3190 #COVID19: Twitter as a Resource for IBD Patients During a Global Pandemic. *American Journal of Gastroenterology*, 115(1), S1675–S1675. doi.org/10.14309/01.ajg.0000714808.26073.18
- Littman, J., Chudnov, D., **Kerchner, D.**, Peterson, C., Tan, Y., Trent, R., Vij, R., & Wrubel, L. (2018). API-based social media collecting as a form of web archiving. *International Journal on Digital Libraries*, 19(1), 21–38. doi.org/10.1007/s00799-016-0201-7
- Goel, V., **Kerchner, D (co-first authors)** (2017). WADL 2016 Panels: Worldwide activities on Web archiving; Social media, Web archiving, and digital libraries. *Bulletin of IEEE Technical Committee on Digital Libraries*: 31 (1).
- Ye, Y., Ye, D., Zeljak, C., **Kerchner, D.**; He, Y.; Littman, J. (2017). Web-Archiving Chinese Social Media: Final Project Report. *Journal of East Asian Libraries*: Vol. 2017 : No. 165, Article 11.
- Littman, J., **Kerchner, D.**, He, Y., Tan, Y., Zeljak, C. (2017). Collecting Social Media Data from the Sina Weibo Api. *Journal of East Asian Libraries*,
- Wrubel, L., **Kerchner, D.**, Littman, J. (2016). Need Help with Your Code? Piloting a Programming and Software Development Consultation Service. *Code4Lib Journal*, 34.
- Chudnov, D., **Kerchner, D.**, Sharma, A., Wrubel, L. (2014). Technical Challenges in Developing Software to Collect Twitter Data. *Code4Lib Journal*, 26.
- Sinex, C., **Kerchner, D.**, Cox, K., Basile, S., Sellers, W., Hindman, E., Loftus, S., Hummel, J. (1998). WLTAE: An HLA Federation for Logistics and Warfighting Models. *Proceedings of the Fall SISO Simulation Interoperability Workshop*.

Pending Publications

- Ortega-Santos, C., **Kerchner, D.**, Rahnavard, A., Crandall, K. (2026) Acute Exercise-Induced Changes in Gut Microbiome Composition, Function, and Gut-Derived Stool and Plasma Metabolome Across Obesity Phenotypes in Young-Adult Women: A Pilot Study Protocol. *MedRxiv*. doi.org/10.64898/2026.07.10.26357758
- Farooq, F., Oakley, E., **Kerchner, D.**, et al. (2023) Risk of Adverse Maternal and Fetal Outcomes Associated with COVID-19 Variants of Concern: A Sequential Prospective Meta-Analysis. *MedRxiv*. doi.org/10.1101/2023.04.03.23287260
- Kerchner, D., Rahnavard, G. (2024) Association of maternal gestational diabetes mellitus with newborn gut metabolome.

Other Selected Publications

- **Kerchner, D.**, & Wrubel, L. (2020). Coronavirus Tweet Ids [Data set]. Harvard Dataverse. doi.org/10.7910/DVN/LW0BTB
- Bahador, B., **Kerchner, D.** (2019). Monitoring Hate Speech in the US Media, report, bit.ly/mhsusm19
- **Kerchner, D.** (2016). Are You Living in a Filter Bubble? Web searching, privacy, objectivity, and GW Libraries search, blog post, tinyurl.com/kerchner-filter-bubble

- **Kerchner, D.** (1996). Forecasting Site Selection Using Data Association, Masters thesis.

Selected Presentations

- Kerchner, D. (March 2026). Pixi: Fast, Reproducible Environments for Python, R and More Without the Headaches, GW Open Source Conference.
- Kerchner, D. (March 2025). Positioning the R in Open Source: RStudio + GitHub + renv workflows, GW Open Source Conference.
- Kerchner, D. (July 2024 and July 2025). You Can Be a GW Student Too! A Guide for LAI Staff and Librarians, LAI Institute, docs.google.com/presentation/d/1Y9rN0jB5gBRp14hYj30mYCm2Ttvyr6f6p63x_uriDPQ/
- Kerchner, D. (May 2024). Association of maternal gestational diabetes mellitus with newborn gut metabolome. GW Biostatistics Center, <https://docs.google.com/presentation/d/1ScFDjMF-dOk8WCWjSWCHdYUG3dqfVBqotJl8DkgaOXM/edit?slide=id.p1#slide=id.p1>
- Kerchner, D. (Mar 2023). Librarians Launching Success in the Era of Coding as an Essential Researcher Literacy. Empirical Librarians conference www.lib.utk.edu/emplibs/2023-sessions-presentations
- Kerchner, D. (Dec 2021). Social Feed Manager: A Social Media Capture Tool. Digital Preservation Coalition (UK) Web Archiving & Preservation Working Group General Meeting www.dpconline.org/events/wapwg-meeting-dec2021
- Kerchner, D. (Nov 2021). Version Control and Collaboration with Git[Hub], Showcasing Your Work with GitHub Pages, and Your Code as a Scholarly Object with Zenodo. Guest lecture in GW PUBH 6860 Principles of Bioinformatics
- Kerchner, D. (April 2021). Bash shell / Unix command line. Guest speaker, GW Coders meeting
- Kerchner, D., Bahador, B. (January 2021). Spark talk: Monitoring Hate Speech During the 2020 Presidential Election
- Kerchner, D. (Aug 2020). The ISIS Files: A Hyrax Implementation. Guest speaker, Samvera Partners call. www.youtube.com/watch?v=78K5ESO2Zaw&t=110s
- Kerchner, D., Wrubel, W. (Feb 2020). Social Feed Manager. Digital Preservation Coalition webinar
- Kerchner, D. (Nov 2019). RStudio + Git for Collaboration and Reproducibility, GW Milken Institute Department of Epidemiology seminar, Washington, DC.
- Kerchner, D. (Sept 2019). Social Feed Manager: Helping researchers and archivists build social media collections," iPres 2019 Conference on Digital Preservation, Amsterdam, Netherlands.
- Kerchner, D. (July 2019). Getting Data With APIs, Capital Area Business Academic Librarians Summer Meeting.
- Kerchner, D., Wrubel, L. (Dec 2018). Social Feed Manager & Social Media Archiving. Digital Preservation Coalition webinar.
- Ye, D., Kerchner, D., Ye, H., ACRL Annual Meeting (March 2017). Web Archiving for Librarians: A Three-University Collaboration to Preserve Non-Official Voices in China's Anti-Corruption Campaign. ACRL Annual Meeting, March 23, 2017, Baltimore, MD

- Kerchner, D., Wrubel, L., Littman, J. (March 2017). Coding Consultations: Meeting Today's Needs With A New Library Service. WRLC Annual Meeting, Washington, DC
- Kerchner, D. GW ScholarSpace and the Making of a More Agile Library. GW Project Management Symposium, September 26, 2016, Washington, DC.
- Chudnov, D., Kerchner, D., Wrubel, L. (December 2013) Collecting Social Media and Supporting Twitter Research with Social Feed Manager. Coalition for Networked Information annual meeting, Washington, DC.

Grants

- 2025 Awarded a United States Research Software Engineer (US-RSE) Association Community and Travel Funds \$1,500 grant to organize and teach a Metagenomics Data Carpentry workshop at Tel Aviv University in October 2025.
- 2024 Awarded a United States Research Software Engineer (US-RSE) Association Community and Travel Funds \$2,500 grant to organize and teach the first-ever Data Carpentry workshop in Israel, which was a successful 3-day Genomics Data Carpentry workshop held at Weizmann Institute of Science in October 2024.
- 2024 Lesson proposal selected as among 8 finalists for the [UCLA-IMLS Lessons for Librarians in Open Science](#) 2024 cohort, with a \$5,000 stipend.
- 2023 Applied for Better Scientific Software (BSSw) Fellowship Program for \$25,000 grant to promote practices, processes, and tools to improve developer productivity and software sustainability of scientific code. Not awarded.
- 2020 Applied for Software Sustainability Institute (SSI) £12,500 grant for developing and piloting Carpentries-style course material. Not awarded.
- 2019-2021 Co-Principal Investigator, Continuing Education to Advance Web Archiving (CEDWARC), Institute of Museum and Library Sciences

Professional Certifications

Certified Data Carpentry/Software Carpentry Instructor, The Carpentries (2018-present)
Project Management Professional, Project Management Institute (2008-present)

Mentorship

- 2017-2018 Aditya Dharne, Graduate Student, GWU, Software Development
- 2017-2018 Rithvik Mundra, Graduate Student, GWU, Software Development
- 2016-2018 Victor Tan, Graduate Student, GWU, Software Development
- 2014-2015 Mustafa Dasorwala, Graduate Student, GWU, Software Development
- 2014-2015 Rajat Vij, Graduate Student, GWU, Software Development
- 2013-2015 Ankushi Sharma, Graduate Student, GWU, Software Development
- 2013-2014 Darshan Pandhi, Graduate Student, GWU, Software Development

Volunteer Experience

- 2026 Conference session proposal reviewer, US Research Software Engineering Association
- 2025 Conference session proposal reviewer, US Research Software Engineering Association
- 2025 Conference organizing committee, GW Open Source Conference
- 2020 CarpentryCon 2020 conference planning committee and budget subcommittee member. Planned budget, scholarship, and scheduling of over 60 presentations.
- 2019 CarpentryConnect DC task force lead
- 2016 Code4Lib Conference Diversity Scholarship committee member. Created framework for application review and awards.

Professional Memberships

International Society for Computational Biology
Project Management Institute
US Research Software Engineer Association

Selected Recent Graduate Coursework

George Washington University:

- 2025 Ethics in Domestic & International Research
- 2024 Cross-Cutting Concepts in Public Health
- 2023 Statistical and Machine Learning; Genomics; Bioinformatics Algorithms; Applied Meta-Analysis
- 2022 High Performance and Cloud Computing; Computational Biology
- 2021 Principles of Bioinformatics; Applied Categorical Data Analysis
- 2020 Mathematical Statistics
- 2019 Regression Analysis, Biostatistical Applications for Public Health
- 2017 Data Mining

Other Education and Training

1998-1999 Alexander & Eva Heiden Institute, Jerusalem, Israel

Skills

Programming: R (advanced), Python (advanced), Bash/command shell (advanced), Ruby/Rails (intermediate), Java (intermediate), C/C++ (intermediate), SQL (advanced), Git/GitHub (advanced), HTML/CSS/JavaScript (intermediate)

Computing environments: Linux (advanced), Amazon Web Services (intermediate); High-performance/High-throughput computing (SLURM, HTCondor)

Relational databases: MySQL, Postgresql

Online databases: NCBI/GenBank

Statistics/Data Science: Statistical analysis (advanced), machine learning (intermediate), data visualization (advanced)

Artificial Intelligence/Language Models (currently learning)