Zachary B. Rodriguez, PhD (he/him/his)
Computational Biologist | September 2022

🏠 Baton Rouge, LA
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🔗 ZachRodriguez.Me

Education

Louisiana State University	**Baton Rouge, LA**	**Clarkson University**	**Potsdam, NY**
PhD, Biology	2014 - 2020	BS, Biology	2009 – 2013

Professional Experience | Full C.V.

Center for Computation & Technology Baton Rouge, LA
Data Scientist in Mental Health 2021 +

- Developed novel **analytical pipelines** for predicting mental health symptoms by deploying machine learning (ML) and Natural Language Processing (NLP) strategies on archival clinical data
- Integrated and analyzed **complex datasets** from multiple data sources, both public and proprietary, including video diaries, audio interviews, patient text, clinical surveys, and time series data
- Demonstrated high level of **integrity**: complied with security/privacy policies (e.g., HIPAA, IRB), and created data management plans for archiving, documenting, and auditing electronic health records
- Effective **interdisciplinary communication**, written and verbal. My research was published in 6 peer-reviewed articles, presented at 5 international conferences, and presented during weekly meetings
- **Collaborated** with graduate and undergraduate researchers from multiple universities, with NLP/ML experts as part of an international language consortium, and with industry researchers
- Advocate for **diversity, equity, and inclusion (DEI)**: selected as LSU's representative for the 2021 SEC Emerging Scholars Summit for the 14 major research universities in Southeastern US. Recognized for my academic merit and commitment to EDI

Louisiana State University, Department of Psychology Baton Rouge, LA
Research Scientist in Computational Psychopathology 2020 - 2021

- Advanced digital phenotyping efforts (e.g., videos, speech recordings, electronic health records) to measure symptoms and risk-states associated with serious mental illnesses
- Developed an analytic approach for feature engineering, dimensionality reduction, and **multimodal analysis** of ambulatory speech and video facial data collected from patients' smartphones
- **Delivered results as needed**. This included providing solutions and scripts, troubleshooting existing methods, analyzing results, creating data visualizations, and preparing presentations
- I employed **advanced statistical strategies** and machine learning algorithms, such as decision trees, SVM, random forest, and unsupervised clustering on archival human health data
- Created ETL (Extract, Transform, Load) pipelines to **automate and aggregate** data input from hundreds of archival projects for data retrieval, analysis, and visualization.

Louisiana State University, Museum of Natural Science Baton Rouge, LA
NSF Research Fellow in Bioinformatics 2015 - 2020

- Investigated biological phenomena in reptiles (e.g., green blood, adhesive toe pads, live birth) by integrating and analyzing different types of biological data (ecological, phenotypic, and genomic)
- Mined publicly available data and generated genomic data from next-generation sequencing (NGS)
- Completed several independent research projects from the ground up, including study design, acquisition of external funding ($180,000), sample collection, data analysis, and publication
- Ensured compliance with animal research protocols and review and audit forms for completion and accuracy. Helped prepare regulatory submissions for Institutional Review Board (IRB) approval
- I communicated results widely and broadly: my work was published in 3 high-profile journals, presented at 15 research conferences/seminars, featured in several high-profile news outlets (e.g., AP, NPR, Fox News, National Geographic), and discussed in TV & Radio interviews (see zachrodriguez.me/science-communication more)

Skills | <u>LinkedIn Profile</u>

- **Languages and Interpreters**: Python, Unix/Linux Shell Scripting, R, SQL, Matlab, pandas, ggplot
- **Data Analysis**: statistics, machine learning, data visualization, natural language processing (NLP), regression, dimensionality reduction, clustering, database mining, model testing, simulation
- **Platforms**: Linux, Windows, Microsoft Azure, Amazon Web Services (Aws), Google Cloud Platform
- **Technologies**: MySQL, Data Pipelines, Analysis Pipelines, database management, graphing
- **Laboratory & Bioinformatics**: genomics, DNA, RNA, PCR, Illumina next-generation sequencing, library preparation, gene expression, whole-genome sequencing,
- **Data Management and Integrity**: ETL, archiving, backing up, version control, bug tracking disseminating, HIPPA compliance, IRB compliance
- **Communication**: scientific writing, presenting, data visualization, mentoring, teaching, public speaking, public outreach, blog contributions, social media, TV interviews, podcast interviews

Select Scientific Publications | <u>Google Scholar Profile</u>

1. Cohen, A. S., <u>Rodriguez, Z.B.</u>, Warren, K. K., Cowan, T., Masucci, M. D., Edvard Granrud, O., Holmlund, T. B., Chandler, C., Foltz, P. W., & Strauss, G. P. (2022). Natural Language Processing and Psychosis: On the Need for Comprehensive Psychometric Evaluation. Schizophrenia Bulletin.
2. Cowan, T., <u>Rodriguez, Z. B.</u>, Granrud, O. E., Masucci, M. D., Docherty, N. M., & Cohen, A. S. (2022). Talking about Health: A Topic Analysis of Narratives from Individuals with Schizophrenia and Other Serious Mental Illnesses. Behavioral Sciences, 12(8), 286.
3. Holmlund, T.B., Chandler, C., Foltz, P.W., Diaz-Asper, C., Cohen, A.S., <u>Rodriguez, Z.B.</u>, Elvevåg, B. (2022). Towards a temporospatial framework for measurements of disorganization in speech using semantic vectors. Schizophrenia Research.
4. Foltz, P.W., Chandler, C., Diaz-Asper, C., Cohen, A.S., <u>Rodriguez, Z.B.</u>, Elvevåg, B. (2022). Reflections on the nature of measurement in language-based automated assessments of patients' mental state and cognitive function. Schizophrenia Research.
5. <u>Rodriguez, Z. B.</u>, Perkins, S. L., & Austin, C. C. (2018). Multiple origins of green blood in New Guinea lizards. Science Advances, 4(5), eaao5017.

Select Presentations | <u>Publicly Available Research Talks</u>

1. Rodriguez, Z. B., (2022). Spill the tea: Automatic extraction of discussion topics in ambulatory patient speech with a Machine Learning Pipeline. Society for Research in Psychopathology (SRP).
2. Cohen AS, Rodriguez ZB, Warren KW 2022. (2022). Developing a Multimodal Digital Phenotyping Paranoia Measure. The International Society for CNS Clinical Trials and Methodology (ISCTM).
3. Cohen AS, Rodriguez ZB (2021). Integrating multimodal features to improve model generalization, cultural sensitivity, and interpretability in computational psychiatry and psychology. Technology, Mind, and Society (TMS).
4. Rodriguez, Z.B. (2022) Combining Automated Video Analysis and Machine Learning to Code Facial Expressions for Serious Mental Illness. Society for Research in Psychopathology (SRP).
5. Rodriguez Z.B. (2020) Evolution of Green Blood in New Guinea Lizards: Phylogenomics, Biogeography, and Genomics. Systematics, Ecology, and Evolution Seminar Series.

Personal | ⟨◎⟩ frogriguez | 🐦 pseudo_toad

I am a queer Newyorican (Puerto Rican from New York) with a passion for nature and technology. Apart from research, I am a foodie, chef, plant dad, dog-lover, and herpetologist (reptiles & amphibians). To share my passion for our natural world, I frequently participate in local public outreach events where I teach people about science, biodiversity, and snake identification. Lastly, I strive to help underrepresented folks (BIPOC, women, LGBTQ2IA+, people with disabilities) succeed, find mentors, and increase their visibility. See steps I've taken to increase DEI in Science & Technology at
zachrodriguez.me/blog/diversity-networks