Dreycey D. Albin

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Personal | LinkedIn | Github | Google Scholar

dreycey.com | linkedin.com/in/dreycey/ | github.com/dreycey | Google Scholar Link

Skillset Summary

Programming

- Python
- C/C++
- Java
- Bash/Linux
- R (plotting)
- Matlab

Other

- Git / version control
- Agile Development
- Javascript / HTML / CSS
- Docker
- SQL (postgres and MySQL)
- NoSQL (MongoDB, Neo4j)

Misc.

- Spark/Hadoop
- pytorch & tensorflow

EDUCATION

2020 - Current
PhD Candidate – Computer Science (GPA: 3.96)
University of Colorado at Boulder
National Science Foundation Graduate Research Fellow (GRFP)
***Research Advisor(s):* Dr. Mirela Alistar**
Graduation Expected: May 2023

2018 - 2020
***MSc* - Systems, Synthetic, and Physical Biology (SSPB)**
Rice University
Thesis: "*A novel computational platform for sensitive, accurate, and efficient screening of nucleic acids*"
***Research Advisor(s):* Dr. Todd Treangen**

2017 - 2018
Postbaccalaureate (NIH-PREP)
University of Washington
***Research Advisor(s):* Dr. Gabriele Varani**

2012 - 2017
B.S. Chemistry (ACS Certified) (GPA: 3.67)
B.S. Biology (Double Major)
University of Northern Colorado
Honors Scholar (2016-2017)
***Thesis:* "Immunohistochemical Analysis of Colocalization Between the FP Receptor and Endothelial Cells in the Bovine Corpus Luteum"**
Research Advisor(s): Dr. James Haughian and Dr. Patrick Burns

WORK EXPERIENCE

Summer 2022 **Data Scientist (PhD Intern)**
Microsoft
As a data science intern at Azure, the focus of my summer was spent, in general, in the area of capacity management. I spent time gathering insights in several ways: (1) Creating a Power BI Dashboard for collaborative insights, (2) Adding to the codebase the team has worked on, (3) Data collection curation, and (4) Using Machine Learning approaches to gather business level insights into improving certain features. All of these deliverables were presented along the way, as well as writing documentation to communicate findings.

Fall 2021-April 2022 **Full Stack Software Engineer / Machine Learning**
Medtronic
Here I worked as a contract Software Engineer for Medtronic, leading the goal to build a device-centric machine-learning-amenable software system. In particular, my role consisted of designing the system (model-view-controller), and ensuring the peripheral devices would integrate into the back end. I worked with the team to ensure code quality, maintenance, and also lead releasing the software versions. Before leaving I also ensured the minimal viable product contained deep learning pose prediction to assist with the device being built.

Summer 2021 **Computational Biologist (PhD Intern)**
Inscripta: The Digital Genome Engineering Company
The summer was spent creating graph-based algorithms, writing objected oriented software, and communicating findings with the scientists at Inscripta, a genome engineering company. The goal was to use graph genome approaches for synthetic biology and genomic edit detection

Summer 2020 **OwlSpark accelerator**
Rice University
Rice Universities student accelerator, OwlSpark, shows entrepreneurial-minded students how to start a company by going through the process. During this summer 3 cofounders, including myself, learned about go-to-market strategies, branding, mentorship, marketing, pretotyping/prototyping, and how to perform intensive customer interviews. The summer culminated in an online (COVID) pitch to venture capitalists and other shakers and movers in the Houston entrepreneurial scene. (Pitch: https://www.youtube.com/watch?v=-IkGq91cdbY&t=10s)

Spring 2017 **Linear Algebra TA**
University of Northern Colorado
The linear algebra professor asked me to help assist with the course due to interest and achievement while taking the course the previous semester. During the course, I gave feedback to students, helped guide student understanding, and assisted with grading all homework assignments. The professor then offered to pay for the putnam exam, took me to math conferences, and I ended up having a position in the math club.

Summer 2016 **Analytical Chemistry lab Tech Summer Intern**
Pure Vision Technology, Ft. Lupton, Colorado
Trained on fundamental analytical chemistry techniques including HPLC, efficiently following SOP protocols, hydrolyzation of oligomeric sugars (Lignan).

Fall 2014 **Supplemental Instructor for Organic Chemistry**

University of Northern Colorado
Focused on discussing concepts in organic chemistry and introductory biology in a group setting as an instructor.

Fall 2013 - Fall 2015 **Biology and Chemistry peer tutoring**
University of Northern Colorado
As a peer tutor, I assisted students understand concepts from courses including: Biochemistry, Organic Chemistry, and Genetics.

PUBLICATIONS

Published, 2021 Nicolae Sapoval, …, ***Dreycey Albin***, …, Fritz J Sedlazeck, Todd J Treangen
Bioarchive, Europe PMC
"Hidden genomic diversity of SARS-CoV-2: implications for qRT-PCR diagnostics and transmission"

Published, 2021 Medhat Mahmoud; ….; ***Dreycey Albin***; …; Fritz J Sedlazeck, Ben Busby
F1000
"Methods developed during the first National Center for Biotechnology Information Structural Variation Codeathon at Baylor College of Medicine"

Published, 2020 Jones, Alisha; Pisignano, Giuseppina ; Pavelitz, Thomas; White, Jessica; Kinisu, Martin; Forino, Nicolas; ***Albin, Dreycey***; Varani, Gabriele
RNA
"An evolutionarily-conserved RNA structure in the functional core of the long non-coding RNA Cyrano"

Published, 2019 ***D. Albin****, D Nasko*, R. A. Elworth, J. Lu, A. Balaji, C. Diaz, N. Shah, J. Selengut, C. Hulme-Lowe, P. Muthu, G. Godbold, M. Lindvall, M. Diep, A. Porter, M. Pop, K. Ternus, T. J. Treangen
International Conference on Bioinformatics and Biomedicine.
"SeqScreen: a biocuration platform for robust taxonomic and biological process characterization of nucleic acid sequences of interest"

Published, 2020 Matthew J Walker; Matthew D Shortridge; ***Dreycey D Albin***; Lauren Y Cominsky; Varani, Gabriele
Journal of Molecular Biology.
"Structure of the RNA specialized translation initiation element that recruits eIF3 to the 5'-UTR of c-Jun"

PROJECTS

Seqscreen (*Publication: https://ieeexplore.ieee.org/document/8982987)*
Language(s): Python, Perl, Nextflow, and bash
URL: https://gitlab.com/treangenlab/seqscreen
Description: This was the primary software built during my masters program at Rice University. It works as a method for identifying potentially dangerous oligonucleotide sequences. This codebase was developed for the IARPA FunGCAT program, which passed all rounds of funding.

Markov Chain Monte Carlo (MCMC) in a hypercube
Language(s): Python
URL: https://github.com/Dreycey/MCMC
Description: This is an implementation

Adar Index using SQL
Language(s): Bash, SQL
URL: https://github.com/Dreycey/AdarIndex-imperativeSQL
Description: This script implements the Adar Index in SQL (a graph algorithm for showing similarity).

Smithsonian Database Scraping tool
Language(s): Python, Bash, SQL
Description: This tool scrapes images from the Smithsonian API (python) and loads the images into Postgres SQL database using bash scripts (and command line pgsql).This code base was developed for a class of 200 students at Rice University for a database homework assignment.

TRAINING EXPERIENCE

Summer 2019 (2 week program) **Rice Data Science Boot Camp**
Rice University
The Data Science boot camp at Rice University consisted of 40 hours of instruction and labs that covered the basics of data science. This includes: modern regression, cross validation, AWS, unsupervised and supervised learning, and Spark.

Fall 2019 **Leadership Foundations Digital Badge**
DOER Institute for New Leaders, Rice University
I was awarded a Digital Badge through the DOER Institute at Rice University. This was awarded because I completed several trainings on leadership, with In-person training modules on: (1) Effective Delegation, (2) Conflict Resolution, (3) Actively Listening, (4) Time management - Objectives and Key Results, (5) Decision Making, (6) Influence, (7) Learning Agility, (8) Master Adaptability. In addition, there was 1 on 1 coaching (for an entire semester- with professional coach) group Coaching with other graduate students (for an entire semester – with a professional coach)

Summer 2019 **UCLA Computational Genomics Summer Institute**
UCLA
Went through a training focused on various computational techniques used in bioinformatics. The techniques discussed include: Genomic Structural Variation Analysis, Markov Chain Monte Carlo (MCMC), utilizing databases for biological data, and best practices for statistical analysis.

Summer 2018 **Cold Spring Harbor Laboratory Annual Synthetic Biology Course**
Cold Spring Harbor Laboratory
Gained a thorough introduction to lab techniques for synthetic biology through an immersive two-week summer course at CSHL. The techniques practiced include: TXTL, gibson assembly, golden gate cloning, modeling using ordinary differential equations.

RESEARCH EXPERIENCE

2017 - 2018 **Postbaccalaureate Research Education Program (**NIH-PREP**)**
University of Washington
Research Advisor: Dr. Gabriele Varani
Project: "*Computational Modeling the 3D structure of Cyrano"*
Focused on elucidation of RNA structure using both computational and experimental approaches. In addition, I learned the basics of both protein purification and NMR-based RNA structure determination.

Spring 2016 **McNair Scholars Program**
University of Northern Colorado
Research Advisor: Dr. James Haughian
Thesis: *"Immunohistochemical Analysis of the FP receptor in Bovine Corpus Luteal Cells"*
Learned how to fix tissue with paraformaldehyde, use a cryostat to section tissue samples. Used a fluorescence and confocal microscope to visualize strained tissue, and self-taught how to use ImageJ for image processing.

Spring - Summer 2016 **Directed Study In Artificial Intelligence**
***Research Advisor:* Professor Dean Zeller**
University of Northern Colorado
Learned how to self-teach concepts, made an automated pipetting instrument using a microcomputer and materials from a flea market.
Video: https://youtu.be/TsJV2YoOwzo?t=417 (Play 6:56-8:32)
Total cost: $100.00

Summer 2015 **NSF REU Summer Research Experience (**Program: SOYMAP)
Iowa State University
Research Advisor(s): Dr. Jamie O'Rourke and Dr. Michelle Graham
Iowa State University
Project: *"Using Soybean VIGS as a functional Genomics Tool in Common Bean"*
NSF sponsored summer internship at Iowa State University to study crop genetics in a USDA laboratory. Learned molecular genetics techniques, designed and created Virus-Induced Gene Silencing (VIGS) vectors to silence abiotic stress-response genes.

Fall 2014 - Fall 2015 **McNair Scholars Program**
University of Northern Colorado
Thesis: *"Global analysis of gene regulation in human myeloma cells: Understanding the role of the transcription factor Ikaros"*
Research Advisor: Dr. Seth Frietze
Using molecular biology techniques, I was able to utilize CRISPR/Cas9 as a functional genomics tool to investigate transcription factors through reverse genetics.

MENTORING EXPERIENCE

Fall 2021 **Computer Science Graduate mentees**
University of Colorado at Boulder
Mentoring two Master-level computer science students on classes, life, and adjusting to graduate school. Biweekly meetings focused on in depth help with course material or general guidance on life in Colorado - even driving.

Mentees #1/#2 **Summer Interns in the Treangen Lab (2019)** (Jacob and Vigi)
Project: IARPA biodefense Machine Learning for FunGCAT

Role: I was the mentor of both an undergraduate summer intern for an IARPA project and a masters student working in metagenomics. Together we worked on creating a machine learning pipeline, and we delivered a bioinformatics pipeline for evaluating both phylogenetic information as well as structural variations.

Spring 2018 **Advisor for the University of Washington International Genetically Engineered Machines (iGEM)**
Project: "STRONGER TOGETHER: An efficient, generalizable approach to design biosensors for small molecules"
Role: I was the DryLab advisor for the team, helping direct the team on different avenues for modeling the chemically induced dimerization using nanobodies.
PI Labs: Dr. Herbert Sauro's lab, Dr. Liangcai Gu's Lab,
Associated Labs: Dr. David Baker's Lab
Internet URL: http://2018.igem.org/Team:Washington/Model

AWARDS

Spring 2021-Current **Beverly Sears grant**
$1,000.00

Spring 2018 - Current **National Science Foundation Graduate Research Fellowship**

Summer 2018 **Helmsley Scholarship for Synthetic Biology course at CSHL**
$1,885; The Helmsley Charitable Trust

Fall 2018 **"The Dean's Prize"**
$10,000; Deans of Graduate Studies, Rice University
*(used to towards student loans)

2016-2017 **Dean's Honor Roll at The University of Northern Colorado**
(GPA > 3.5+)

Spring 2017 **ABRCMS ABRF Best Poster Award**

Spring 2017 **FASEB DREAM Mentored Travel Award**

Spring 2017 **Undergraduate Academic Scholar Award**
University of Northern Colorado
(Department of Chemistry and Biochemistry)

Fall 2016 **Research Grant Funding**
$750, Office of Undergraduate Research, UNC