

## Joshua P. Schaaf

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### SKILLS

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Python | R | Git | SQL | C | JavaScript | Linux | Excel | PowerPoint | Pandas | NumPy | scikit-learn | TensorFlow  
Keras | PyTorch | Matplotlib | PCR | Methylation | FASTA/Q | ChIP-Seq | Communication | Leadership

### EXPERIENCE

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#### Data Analyst, FOXO Technologies, Minneapolis, MN

July 2021-Present

- Analyze 'wide' epigenetic data (~1 million features) using Python (pandas, numpy) and R to provide accurate predictors for clinical targets using automated machine learning (ML) platform DataRobot. Analysis using working knowledge of *scikit-learn* and other ML/data mining algorithms
- Develop [RAPA](#) (Robust Automated Parsimony Analysis), an open-source Python package for performing recursive feature reduction of ML models created with DataRobot
- Create unit tests and update/maintain documentation for Python packages supporting the company
- Quickly switch between projects, adapting to different techniques in the start-up environment
- Utilize GitHub for software development, version tracking, and data analysis collaboration
- Utilize AWS Sagemaker and Cloudwatch to analyze/create ML models with data stored in S3
- Present analytical findings to groups of 5-10 people in a clear, understandable, and concise manner
- Create easy to understand figures/interactive dashboards with data visualization tools in Python (plotly, matplotlib, seaborn), R (ggplot), and lucidchart

#### Genetic Research Experience, Balciunas Lab, Temple University, PA

December 2018-May 2021

- Effectively collaborated with a team to engineer a fully 'floxed' *tcf21* allele for the study of post-embryonic regenerative abilities of zebrafish hearts, and of the role *tcf21* plays in heart regeneration
- Created a pipeline for transforming large, raw ChIP-seq fastq datasets with GalaxyHub, bowtie 2, samtools, R and Python scripts, and MEME-ChIP with statistical programming practices
- Experienced with Gel Electrophoresis, PCR, Zebrafish Maintenance/Rearing, Survival Surgeries (*Danio rerio*), Conditional Mutagenesis, Cre-loxP, CRISPR/Cas9, Fluorescent Microscopy
- **Poster:** [Conditional Mutagenesis of Zebrafish \*tcf21\*](#) at 2019 Undergraduate Research Symposium
- Presented at weekly lab meetings with in-depth analysis and discussion of obtained data, as well as peer-reviewed journal presentations
- Accepted to Research Experiences for Undergraduates REU, CSUSM: Cancelled, COVID-19 Pandemic

### CODING PROJECTS

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**Imputation Analysis with High Dimensional Data:** Using many techniques described in literature, including HoloClean in PostgreSQL, I analyzed different imputation methods for highly dimensional data.

**Using Machine Learning for Species Recognition:** Developed Python scripts to retrieve over 300,000 images of PA moths from the iNaturalist API, then a TensorFlow deep learning model for species recognition.

**Using Machine Learning for Chest X-Ray Abnormality Detection:** Created a machine learning model with Python scripts for CXR preprocessing with scikit-image and object detection with YOLOv5 in PyTorch.

### EDUCATION

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Temple University, College of Science and Technology

Philadelphia, PA

Professional Science Masters (PSM), Bioinformatics

May 2022 - Cumulative GPA: 4.0/4.0

Bachelor of Science, Biochemistry, Minor in Computer Science

May 2021 - Cumulative GPA: 3.9/4.0

**Honors and Distinctions:** *Magna Cum Laude*, Distinction in Major, Dean's List, **Temple Honors Program**, **Natan Luehrmann-Cowen Memorial Award** (College-Wide Academic Excellence, Musical Instrument)

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Scholarships: NSF REU at CSUSM with Dr. Arun Sethuraman (Cancelled due to SARS-CoV-2), **Science Scholars Program** (SSP), Temple Academic Scholarship, TUDMB Scholarship

### RELEVANT COURSEWORK

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Mathematics/CS:	Coding in <u>C</u> ; Biological Models in <u>Python</u> ; Program Design/Abstraction (Java); Data Structures ( <u>Java</u> ); Calculus I, II, Honors III; <b>Machine Learning</b> ; <b>Biostatistics</b>
Physical Sciences:	Honors Organic Chemistry I, II; Physical Chemistry of Biomolecules; Physics I, II
Biological Sciences:	Genomics ( <u>R</u> , <u>Python</u> ); Genetics; Cell Structure and Function; Biochemistry I, II; Fundamentals of Genomic Evolutionary Medicine; Ethics in Biotechnology

### LEADERSHIP AND ACTIVITIES

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<b>1<sup>st</sup> Flute</b> , Video Game Orchestra at UC Davis	2022
<b>Volunteer Belay</b> , Reach Climbing & Fitness	2022
<b>Principle 2<sup>nd</sup> Violinist</b> , Lower Merion Symphony	2021-2022
<b>1<sup>st</sup> Flute/Piccolo Player</b> , Temple University Diamond Marching Band/Collegiate Band	2017- 2018