

# ZACH ALLEN

He/Him

## IMPACT & EXPERIENCE

**Software Engineer** at Pluton Biosciences

2021-03 - 2021-08

**Data Engineering and Cloud Infrastructure supporting Bioinformatics & Genomics research**

- **AWS Genomics Pipeline**  
Terabyte-scale AWS genomics pipeline to meet rapidly growing startup needs
  - Demonstrated experience using CS to meet business needs:  
Developed simple Python+R framework enabling non-CS teammates to deploy large-scale genomic analysis queries, without 'blocking on' the bottlenecked CS team.
- **Containerized Deployment & Autoscaling**  
Researched, containerized, documented, and deployed 10+ Computational Genomics tools to AWS ECS and EC2

**Embedded Systems Engineer** at Applied Separations 2019-01 - 2020-01

**Custom C++ / Arduino pump control software for chromatography and analytical chemistry systems in C and C++**

- Analyzed and validated stable delivery with a custom, high-performance smoothing algorithm for variable feedback delay.

**Machine Learning Researcher (Intern)**

2017-01 - 2017-05

at Pacific Northwest National Laboratory

**ML Research and Data Engineering**

- Designed and tested novel Neural Network algorithms, architectures, and error formulations for NLP, image classification, and time-series data classification.
- Demonstrated increased test accuracy (15% → 90% detection with higher Bayesian Confidence) on unbalanced (>1000:1) datasets for network insider threat detection, without duplication, augmentation, or batch filtering.

## EDUCATION

**Bachelor's in Computer Science**

2019-02 - 2022-08

at Western Governors University

**Focused on Machine Learning and Project Management in a fully remote environment**

**SUB-TASKS:**

- **Diamond Price Prediction Model** [link](#)  
End-to-End ML Model development and documentation for a mock gemstone marketplace
  - Researched & analyzed opportunities to integrate Machine Learning with existing infrastructure, merging technical requirements and business needs.
  - Rapidly prototyped Python data pipeline in Numpy/Pandas and ML model in SciPy, demonstrating project validity quickly at least expense.
- **Advanced Java Concepts** [link](#)  
Developed appointment scheduling and customer database tool in Java
  - Streamlined Model-View coupling by encapsulating MySQL/JDBC connection objects with data processing steps and Observable outputs in a shared wrapper class.

**ACHIEVEMENTS:**

- Excellence Award for Communication Applications [link](#)

## SUMMARY

Machine Learning Researcher & Data Engineer with 5 years experience in collaborative AI innovation & infrastructure implementation at scale. Expert in Python & TensorFlow since 2015/2017. Passionate about working closely with multidisciplinary partners to shape the future towards global sustainability. Excellent writing, speaking, presenting, and technical communication skills.

## CONTACT

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## PROJECTS

**Neural Cellular Segmentation** [link](#)

**Exploring neural cellular automata and attention (NCA+A) for medical image segmentation in TensorFlow**

- Developed, tested, and iterated NCA+A models in TensorFlow, balancing system resources and model size.
- Created multiple tf.Data pipelines with preprocessing and data augmentation steps.