

# ZACH ALLEN

He/Him

## IMPACT & EXPERIENCE

**Software Engineer** at Pluton Biosciences

2021-03 - 2021-08

### Data Engineering supporting Bioinformatics Research

- **AWS Genomics Pipeline**  
Independently designed, implemented, and deployed Terabyte-scale AWS genomics pipeline in 4 months part time, from no prior genomics or AWS experience.
  - Designed, implemented, and documented gRPC+ProtoBuf pipeline architecture.
- **Containerized Deployment & Autoscaling**  
Researched, containerized, documented, and deployed 10+ Computational Genomics tools to AWS ECS and EC2.
  - Streamlined & automated containerization workflow for Computational Genomics tools.
  - Detected, diagnosed, and resolved compute resource inefficiencies.
- Led the CS team in adopting SDLC tools like Git, AWS CodeCommit, and Docker / AWS Elastic Container Registry. Championed utilization of Microsoft Teams Kanban tools for project&process management.
- Worked closely with SMEs to perform analysis and visualization of microbial taxonomy data in R.

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

### Developed custom C++ / Arduino pump control software

- Designed and developed pump control software for chromatography and analytical chemistry systems in C and C++.
- Wrote a simple heuristic scheduler & virtual threading to manage real-time (60Hz+) pump control, touch screen input, and data/control communication, all on a single Arduino Mega.
- Designed and validated delivery prediction and smoothing algorithms for nonlinear feedback delay.
- Interfaced with separate development team in charge of chromatography control software. Collected and implemented requirements from instrumentation engineer.

**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, without duplication, augmentation, or batch filtering.

## EDUCATION

**Bachelor's in Computer Science** at Western Governors University

2019-02 - 2022-08

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

- **Diamond Price Prediction Model** [link](#)  
Proposed, implemented, and documented a diamond price prediction ML model
  - Demonstrated integration of project management and software engineering best practices.
  - Developed simple Data Pipeline in python/pandas.

## 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**

- Created multiple tf.Data pipelines with preprocessing and data augmentation steps.

**Interplan** [link](#)

**Task dependency management from a Graph Database**

- Developed a Neo4J+JS dependency resolution and task status tracking API.