Zach Allen

He/Him

IMPACT & EXPERIENCE

Sofware 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

  - Ensured strong integration between pipeline components with an in-house gRPC+ProtoBuf pipeline architecture, built for LIMS/metadata integration from the ground-up.
  - 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

- Worked closely with SMEs to perform statistical analysis and visualization of microbial taxonomy data in R.

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

- 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 infrasructure, 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.

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.

Interplan *link*

Task dependency management from a Graph Database

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

MarkNotes *link*

Intuitive journaling tool designed to encourage long-term review and introspection

- Integrated MongoDB and Node API for destructuring, storing, and querying Markdown entries as semi-structured data.