Zach Allen *He/Him*

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Interactive resume here

ABOUT ME

Computer Scientist with 3 years experience in leadership, Data Science, and problem-solving. Reliably fast learner across all topics. Independently implemented and deployed terabyte-scale AWS genomics pipeline in 4 months part-time. Developed novel ML architectures for unbalanced datasets (>1000:1), raising rare-case detection from 15% to 90% with no loss in accuracy. Leverages communication and Project Management skills to integrate SME, business, and stakeholder needs.

EDUCATION

- **Bachelor's in Computer Science** 2019-02 - 2022-08
  at Western Governors University *in Utah, USA (Online)*

  Thrived in a self-directed remote envirionment

  SUB-TASKS:
  - **Diamond Price Prediction Model** *link*

    Produced and documented a diamond price prediction model.
    - Developed simple Data Pipeline in python/pandas.

      Python | Software Engineering | Data Engineering
    - Demonstrated integration of business needs and SDLC processes.

      Python | Technical Communication | Project Management | SDLC | Requirement Management | Value Delivery | Documentation
  - **Advanced Java Concepts**

    Developed appointment scheduling and customer database tool in Java.
    - Demonstrated tight integration with JavaFX, JDBC, and MySQL.

      SQL | OOP | MySQL | JDBC | JavaFX | Java

  ACHIEVEMENTS:
  - **CompTIA Project+** *Issued by Pearson VUE* 2019-07
    Validate with Registration: 358639011 Validation: 155946649

    Demonstrated understanding of Project Management roles, processes, and documentation.

    Technical Communication | Project Management | SDLC | Requirement Management
  - **IT Information Library Foundations Certification (ITIL)** *Issued by AXELOS* 2020-08

    Demonstrated understanding of designing, deploying, maintaining, and retiring IT resources.

    SDLC | Requirement Management | Value Delivery | Service Management

PROJECTS

- **Neural Cellular Segmentation** *link*

  Exploring neural cellular automata and attention (NCA+A) for medical image segmentation
  - Developed, tested, and iterated NCA+A models, balancing system resources and model size.

    Python | Mathematics | TensorFlow | Optimization | Machine Learning | Neural Networks | Experimental Design
  - Created multiple tf.Data pipelines with preprocessing and data augmentation steps.

    Python | Software Engineering | Data Engineering | TensorFlow

IMPACT & EXPERIENCE

- **Sofware Engineer** 2021-03 - 2021-08
  at Pluton Biosciences *in St. Louis, Missouri, USA link*
  under Dr. Boahemaa Adu-Oppong *She/Her* BAdu-Oppong@plutonbio.com

  Data Engineering supporting bioinformatics research
  - Independently designed, implemented, and deployed Terabyte-scale AWS genomics pipeline in 4 months, from no prior genomics or AWS experience.

    Python | Software Engineering | Project Management | Data Engineering | Test Automation & Validation | Linux/Bash | Docker/Kubernetes | Optimization | Rapid Learning | AWS | Self-Direction | Biotechnology | Bioinformatics
  - Interfaced with SMEs to gather, interpret, and execute on pipeline requirements. Interfaced with Bioinformatics pipeline design expert for high-level guidance.

    Technical Communication | Project Management | Requirement Management
  - Designed, implemented, developed training for, and documented an in-house Python API enabling (non-CS) biologists to deploy multi-stage genomics queries without relying on the CS team.

    Python | Technical Communication | Software Engineering | Requirement Management | Value Delivery | Service Management | Documentation
  - Led the CS team in adopting CI/CD tools like Git, AWS CodeCommit, and Docker / AWS Elastic Container Registry.

    SDLC | Test Automation & Validation | Value Delivery | Docker/Kubernetes | Service Management | AWS | Leadership | Git | CI/CD

- **Embedded Systems Engineer (Contractor)** 2019-01 - 2020-01
  at Applied Separations *in Allentown, Pennsylvania, USA link*
  under Aaron Allen *He/Him* mnrnln@gmail.com

  Developed custom C++ / Arduino pump control software
  - Designed and developed pump control software for chromatography and analytical chemistry systems.

    Software Engineering | SDLC | 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.

    Software Engineering | Algorithm Design & Selection | Optimization
  - Designed and validated mass delivery tracking, prediction, and smoothing algorithms, to handle nonlinear feedback delay.

    Software Engineering | Data Engineering | Test Automation & Validation | Mathematics | Algorithm Design & Selection
  - Interfaced with separate development team in charge of chromatography control software. Collected and implemented requirements from instrumentation engineer.

    Technical Communication | Project Management | SDLC | Requirement Management | Documentation | Teamwork

- **Machine Learning Researcher (Intern)** 2017-01 - 2017-05
  at Pacific Northwest National Laboratory *in Richland, Washington, USA link*
  under Dr. Enoch Yeung *He/Him* eyeung@ucsb.edu

  ML Research and Data Engineering intern
  - Designed and tested novel Neural Network algorithms, architectures, and error formulations for NLP, image classification, and time-series data classification.

    Python | Data Engineering | Mathematics | Algorithm Design & Selection | TensorFlow | Machine Learning | Rapid Learning | Neural Networks | NLP
  - Demonstrated increased test accuracy (15% → 90% detection with higher Bayesian Confidence) on unbalanced (>1000:1) datasets, without duplication, augmentation, or batch filtering.

    Test Automation & Validation | Mathematics | Algorithm Design & Selection | Machine Learning | Experimental Design | Statistics
  - Worked independently, balancing multiple projects and deliverables with minimal mentor supervision, often meeting every two weeks.

    Technical Communication | Project Management