

# J. NELSON

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## SUMMARY

Dedicated Data Scientist and Software Engineer with over 2 years of hands-on experience in Python, data analysis, and machine learning. Leading elements of multiple applied data science projects with a diverse focus, including cybersecurity, disease risk modeling, NLP, and more. Skilled in communication and documentation. Eager to make a positive impact on the world and apply proven skills.

## TECHNICAL SKILLS

**Programming Languages:** Python, SQL, NoSQL, Java, C, C++, Markdown

**Frameworks:** GIT, Conda, Tableau, Arduino, Docker, ArcGIS, AWS, Jira, Teams, Confluence

**Python Tools:** Sagemaker, Jupyter Notebook, Pandas, NumPy, SciPy, scikit-learn, Matplotlib, Pytorch.

**Theory:** statistics, probability, algorithms, AI, machine learning, classification and regression modeling, clustering, deep learning.

## EDUCATION

**University of Washington, Seattle, Washington**

**Master of Science in Computer Science & Engineering** || 9/20 - 3/22 || GPA: 4.0

**Relevant Coursework:** Deep Learning, Computer Security, Database Internals, Capstone to Empower Underserved Populations, Computational Biology

**Bachelor of Science in Computer Science** || Minor in Mathematics || 9/16 - 6/20 || GPA: 3.8

**Relevant Coursework:** Machine Learning, Advanced Synthetic Biology, Artificial Intelligence, Computer Vision, Data Visualization, Data Management, Data Structures and Parallelism, Software Design and Implementation.

## EXPERIENCE

**Data Scientist, Pacific Northwest National Laboratory, Seattle WA** || Aug 2022 - Present

- Data Scientist in the Applied AI Systems Group
- Led research, implementation, dockerization, and documentation of an open-source language translator package, achieving a translation speed of 50 words per second on an AWS p2.8xlarge (8 GPUs) instance.
- Designed and implemented a machine learning model to identify articles that were relevant to the project, resulting in a model with 95% accuracy.
- Revamped and optimized the codebase for a cybersecurity project focused on modeling cyber risks in agricultural systems, enhancing clarity, efficiency, and visualization capabilities.
- Writes comprehensive documentation on Confluence for team onboarding on topics such as Amazon Sagemaker, OpenSearch, and Conda.
- Mentors entry level employees, helping them to develop professional and technical skills

**Data Science Intern, Sandia National Labs, Livermore CA** || Jun 2021 - Sep 2021

- Researched data analytics as a means of expediting software behavior analysis as part of a small research team.
- Defined, implemented, and evaluated multiple techniques, such as natural language processing and clustering, in Python using Jupyter Notebook, Pandas, UMAP, and NumPy to analyze process traces.
- Successfully classified process traces collected under varying conditions, paving the way for applying techniques to more complex applications and environments.
- Created visualizations and presentations to communicate work to others at group meetings, department at all-hands meetings, and intern presentation demo days.

### **Data Scientist, Carothers Research Group, Seattle WA || Jan 2019 - March 2022**

- Designed and deploys machine learning, modeling, and data analysis to research synthetic biology.
- Built and trained custom regression machine learning models in Python, the best of which had an R square value of 0.91, to describe chemical reaction networks of CRISPR systems.
- Designed analytical python scripts to filter genetic datasets, reducing 2,000 E. coli genes down to 25 and over 5,000 P. Putida genes down to 2.

### **Teaching Assistant, University of Washington, Seattle WA || Jan 2019 - June 2019, Sep 2020 - March 2022**

- Intro to Data Science (CSE 180) Spring 21. Data Programming (CSE 160) during Winter 19, Autumn 20, and Winter 21, Autumn 21, Winter 22. Intermediate Data Programming (CSE 163) Spring 19.
- Taught and created material to help students effectively learn fundamental data science topics including scientific Python packages, machine learning concepts, and data ethics.
- Created content for a new Intermediate Data Programming course, the size of which was doubled from 80 to 160 after a successful first quarter.
- Created additional online quiz sections for hybrid students unable to attend in-person quiz sections.
- Mentored 2 undergraduate TAs by collaborative planning and co-leading quiz sections.

### **PUBLICATIONS**

- Cholpisit Kiattisewee, et. al. [Expanding the scope of bacterial CRISPR activation with PAM-flexible dCas9 variants](https://doi.org/10.1021/acssynbio.2c00405). *ACS Synth. Biol.* 2022, 11, 12, 4103–4112 November 15, 2022 <https://doi.org/10.1021/acssynbio.2c00405>. Author
- Rock Yuren Pang, Ruotong Wang, Joely Nelson, Leilani Battle. [How Do Data Science Workers Communicate Intermediate Results?](https://doi.org/10.48550/arXiv.2210.03305) Symposium on Visualization in Data Science (VDS) at ACM KDD 2022 as well as IEEE VIS Oct 7, 2022. <https://doi.org/10.48550/arXiv.2210.03305>. Author.
- Fontana, J. et al. [Challenges and opportunities with CRISPR activation in bacteria for data-driven metabolic engineering](https://doi.org/10.1016/j.copbio.2020.04.005). *ACS Synthetic Biology*. August 2020. <https://doi.org/10.1016/j.copbio.2020.04.005> Acknowledged.
- Fontana, J., Dong, C., Kiattisewee, C. et al. [Effective CRISPRa-mediated control of gene expression in bacteria must overcome strict target site requirements](https://doi.org/10.1038/s41467-020-15454-y). *Nat Commun* 11, 1618 (2020). <https://doi.org/10.1038/s41467-020-15454-y>. Code written by Nelson included in supplementary methods.

### **COMMUNITY OUTREACH**

#### **President, Pen and Paper Gaming Association, Seattle WA || Sep 2018 - June 2020**

- Organized weekly meetings to create a welcoming, fun, and inclusive place for tabletop roleplaying games for over 100 members.
- Resolved interpersonal conflicts between officers and club members prioritizing de-escalation.
- Pioneered inclusivity outreach and club practices, resulting in gender ratio change from 6:1 to 1:1 (men to non-men)

#### **Station Leader, Girl Scouts of Western Washington, Seattle WA || July 2016 - August 2020**

- Developed and taught a curriculum for over 300 k-6 children annually
- Mentored 4 high school and middle school aged girls in leadership skills