Shaurya Seth

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OVERVIEW

- Co-authored high-impact publications in *Nature Chemical Biology* and *Royal Society of Chemistry*, showcasing expertise in bioinformatics and scientific communication.
- Developed and deployed machine learning-driven tools for peptide discovery at a leading biopharmaceutical company, enhancing R&D efficiency.
- Earned competitive awards, including the Alberta Innovates Summer Research Studentship, for innovative research in bioinformatics and machine learning.

EXPERIENCE

48Hour Discovery Inc.   **Apr 2023–Present**
Machine Learning Engineer   Edmonton, AB

- Designed and implemented a computational peptide discovery pipeline using **Python** and **Biopython**, validated by wet-lab experiments, supporting R&D in a biopharmaceutical setting.
- Processed over **5 terabytes** of paired-end **Illumina sequencing data** (FASTQ files), developing custom barcodes for genomic analysis.
- Built internal tools for DNA oligo design, reducing design time from **3 days to 15 minutes**, enhancing team productivity.
- Developed a company-wide **NGS data analysis pipeline** deployed on **AWS (EC2, S3)**, integrating **MySQL** for data management and enabling scalable genomics research.
- Optimized peptide binding by applying **scikit-learn** and **PyTorch** to search billions of compounds, improving binding affinity by **20%**.
- Collaborated with biologists and chemists to align tools with research needs, demonstrating strong cross-functional communication.
- Skills: **Python, R, Flask, MySQL, AWS (EC2, S3), Biopython, RDKit, PyMol, FASTQ, Github**

RESEARCH

RLAI Lab   **Apr 2021–Sep 2021**
Undergraduate Researcher   Edmonton, AB

- Collaborated with professors to automate an industrial plant using reinforcement learning **(Q-Learning, SARSA)** in **Python**.
- Built a **Matplotlib-based visualizer** to analyze sensor data, improving interpretation efficiency by **30%**.
- Evaluated prediction algorithms on offline data, achieving a **60% performance increase** in prediction accuracy over deep RL with classical methods.
- Skills: **Python, Matplotlib, RL (Q-Learning, SARSA), Time Series Analysis**

Derda Research Group   **Apr 2019–Jun 2021**
Undergraduate Researcher   Edmonton, AB

- Developed GlyNet, a deep learning model in **PyTorch**, predicting protein-glycan interactions with an **R^2 of 0.85**.
- Compiled and cleaned public glycan data using **Pandas** and **NumPy**, creating a structured dataset for analysis.
- Designed a novel fingerprint encoding for carbohydrates, enhancing model accuracy by **15%**.
- Skills: **Python, PyTorch, Pandas, NumPy, Bioinformatics, Machine Learning**

EDUCATION

University of Alberta   **Sep 2018–May 2023**
Bachelor of Science in Physics; GPA: 3.2   Edmonton, AB

AWARDS

Alberta Innovates Summer Research Studentship	2021
GlycoNet Summer Award for Undergraduate Students	2021
Undergraduate Research Initiative Stipend	2020

PUBLICATIONS

[1] GlyNet: a multi-task neural network for predicting protein–glycan interactions. ***Royal Society of Chemistry***, 2022.
[2] Genetically encoded multivalent liquid glycan array displayed on M13 bacteriophage. ***Nature Chemical Biology***, 2021.