Mirza Ahmadi

Guelph, ON, CA | (647)-390-8697 | mirza.am.ahmadi@gmail.com | LinkedIn | GitHub | Portfolio

EDUCATION

University of Guelph **Jan 2024 - Present**
M.Sc., Bioinformatics and AI - Vector Institute Scholar (Current GPA: 3.9/4.0) *Guelph, ON*
- Courses: Machine Learning (ML), Math for ML, Genomic Methods for Bioinformatics, Bioinformatics Software Tools
- Graduate Student Representative on the Bioinformatics Steering Committee and Graduate Student Council

B.Sc. (Hons), Zoology Major with Minor in French Studies (GPA: 3.7/4.0) **Sep 2019 - April 2023**

SKILLS AND CERTIFICATIONS

- **Languages & Tools:** Python, R, Bash, Linux, High-Performance Computing (HPC), Git, HTML & CSS
- **Certifications**: Deep Learning (DL) + Reinforcement Learning | ML + DL | AI + Python | Linear Algebra + Calculus

EXPERIENCE

University of Guelph **Jan 2024 - Present**
M.Sc. Research Project *Guelph, ON*
- Developing an **ETL** pipeline to derive **genome** annotation insights, informing disease, genetic variability and evolution
- Integrating **Python, R**, bioinformatics tools, and **ML** for data processing, sequence classification, and model building
- Leveraging Compute Canada systems and **SLURM** to manage **HPC** jobs for genomic data processing and storage
- Deploying pipeline on a cloud platform, facilitating resource-efficient and convenient access for genomic researchers

University of Guelph **May 2022 - Present**
Evolutionary Biology Researcher *Guelph, ON*
- Designed and executed an independent research report on snake venom evolution across 127 species
- Analyzed proteomic and phylogenetic data in **MS Excel** and **R** to compile phylogenies and create graphical analyses
- Authoring a research paper for publication to add to the current understanding of venom and complex trait evolution

University of Guelph **Sept 2024 – Dec 2024**
Teaching Assistant – Discovering Biodiversity (Introductory Biology Course) *Guelph, ON*
- Led weekly seminars for 120 students and provided teaching support during two weekly lectures
- Developed seminar material aligned with lecture topics, including genetics, evolution and organismal biology
- Evaluated and provided feedback on student seminar worksheets to enhance understanding and learning outcomes

PERSONAL PROJECTS

Augmenting EEG Classification with GAN-Generated Data (BrainHack 2024) | **Demo** | ***Python*** **Dec 2024**
- Collected EEG (brainwave electrical activity) data from our team as each completed two distinct cognitive exercises
- Preprocessed data and trained a **Random Forest** model (**95%** accuracy) using **Pandas**, **NumPy** and **Scikit-Learn**
- Augmented the dataset using a **GAN**, generating 200 000 synthetic data points from the collected EEG data
- Visualized results using Confusion matrices, ROC-AUC curves, loss plots, and learning curves with **Matplotlib**

Evaluating Algorithms for Gene Sequence Classification | ***R (Tidyverse)*** **Nov 2024**
- Assessed the performance of **Random Forest** versus **Linear Regression** models in gene sequence classification
- Highlighted sequence length distribution, k-mer frequency proportions, and feature importance

Road Sign Categorizer | ***Python*** **May 2024**
- Implemented a **convolutional neural network** to classify road sign images into 43 categories with **90%** accuracy
- Leveraged the libraries **TensorFlow**, **Scikit-learn** and **OS** for model development and data preprocessing

Venom Type Classifier | **Demo** | ***Python*** **March 2024**
- Developed a **Support Vector Machine** classifier to predict venom type from protein data, achieving **94%** accuracy
- Utilized **Scikit-learn**, **Matplotlib**, and **Pandas** for model building and visualization of PCA data