Mirza Ahmadi

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

EDUCATION

University of Guelph   **Jan 2024 - Present**
M.Sc., Bioinformatics and Artificial Intelligence (Vector Institute Scholar) – Research-based (Current GPA: 3.9/4.0)   *Guelph, ON*
- Relevant Courses: Computational Thinking for AI (Linear Algebra, Statistics, Calculus), 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
- **Relevant Libraries:** PyTorch, Pandas, NumPy, Scikit-learn, TensorFlow, NLTK, Matplotlib
- **Specialized Skills:** Machine Learning (ML), Deep Learning (DL), Genomics, Computer Vision, Data Visualization
- **Certifications**: 2024 CIFAR **DL+RL** Summer School | Compute Ontario Summer School 2024 (**ML + DL**) | Harvard's CS50 Courses (**AI + Python**) | Coursera's Math for **ML and Data Science** (Linear Algebra + Calculus)

EXPERIENCE

University of Guelph   **Jan 2024 - Present**
M.Sc. Research Project   *Guelph, ON*
- Developing a pipeline to derive novel genome annotation insights, informing disease, genetic variability and evolution
- Profiling transposable element sequences, detailing length, classification, degradation, location, and embedded genes
- 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 and three families
- Analyzed proteomic and phylogenetic data in 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 four sections of 30 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

RELEVANT PROJECTS

Augmenting EEG Classification with GAN-Generated Data (BrainHack 2024) | *Python*   **Dec 2024**
- Collected EEG data from our team of seven, each completing two thinking exercises, resulting in 200 000 datapoints
- Trained a Random Forest **ML** model using collected EEG data, achieving 94.8% classification accuracy on unseen data
- Augmented the dataset using a **GAN**, generating 800 000 synthetic data points using the real EEG data
- Visualized results via Confusion matrices, ROC AUC curves, loss plots (generator vs discriminator), and learning curves

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

Road Sign Categorizer | *Python*   **May 2024**
- Created a **DL** classifier to categorize road signs into one of 43 categories using the GTSRB dataset of 50 000+ images
- Implemented a **convolutional neural network** with pooling layers, achieving a classification accuracy exceeding 90%
- Leveraged the Python libraries TensorFlow, Scikit-learn and OS for model building and data preprocessing

Venom Type Classifier | **Video Demo** | *Python*   **March 2024**
- Developed an **ML** classifier to predict venom types in snake species based on the proportions of 14 venom proteins
- Achieved 94% classification accuracy when given novel snake species and protein data
- Utilized Scikit-learn, Matplotlib, and Pandas to build a support vector machine classifier and visualize PCA data