SADAF GHAFFARI

E: sadafgh@colostate.edu
Location: Fort Collins, CO

PROFESSIONAL SUMMARY

- Real world experience with successfully completing individual and team-oriented data science, machine learning and deep learning projects
- Strong knowledge in statistics, statistical modeling, machine learning, deep learning, and generative modeling techniques

RELEVANT COURSES

Linear/Nonlinear Programming, Linear Algebra for Data Science, Machine Learning, Big Data

RESEARCH EXPERIENCES

Graduate Research Assistant• *Colorado State University*
Fort Collins, CO • 2019 to Current

Reinforcement learning in the context of embodied simulation platform

- Deployed reinforcement learning agent in the 3D simulated environment based on symbolic reasoning to stack objects with different configurations
- Tools/Methods: TD3, DDPG, OpenAI Gym, Unity ML-Agent

Prediction of gene expression intensity signals at the single-molecule resolution

- Deployed machine learning approaches to differentiate the dynamics of measured light intensity for actively translating mRNA spots
- Tools/Methods: CNN, Transfer Learning, SVM

Geospatial visualization of people movement and interaction

- Modeled dynamic movements of people
- Deployed Kepler to geospatially visualize the movement of people on campus
- Tools/Methods: Python, PostgreSQL, Kepler

Automated identification of cell types of RNA single cell

- Deployed machine learning models to classify and visualize the low dimensional structures in gene expression data.
- Deployed GANs on gene expressions and evaluated the realness of gene expressions by classification task
- Tools/Methods: Generative Adversarial Networks

Gesture recognition in dynamic gestures

- Utilized transfer learning to identify various hand gestures in video data
- Tools/Methods: C3D

Pairwise genomic interaction prediction

- Deployed predictive models to identify RNA-RNA interactions in humans. Improved accuracy using Deep Neural Network by 10%.
- The project resulted in determining the key role of cancer.
- Tools/Methods: SVM, XGBoost, and Deep Neural Network

Visiting Scholar• *University of Illinois at Urbana-Champaign*
Champaign, IL • November 2017 to December 2018

Virus detection in clinical samples

- Utilized Python for identification of microbiome and bacterial among genomic reads obtained by clinical sequencing samples in order to account for the adverse effect of bacterial sample impurities using statistical methods and unsupervised learning techniques.

Graduate Research Assistant • *University of Florida*
Gainesville, FL • August 2016 to October 2017

Machine learning enabled cybersecurity

- Utilized Python to perform data analysis on silicon data coming from Ring Oscillator FPGA. Developed supervised learning algorithms on FPGA physical un- clonable function and measured different performance evaluation metrics to assess the security of FPGA.
- Tools/Methods: Random Forest, SVM, Neural Network, and Logistic Regression in Python

Multi-algorithm facial recognition system

- Utilized Python to implement and evaluate the performance of Principal Com- ponent Analysis on three facial images dataset. Extracted features using PCA, and examined various representations of system performance using three different distance/similarity measures such as Correlation, Euclidean and Cosine Similarity.

TEACHING EXPERIENCES

Graduate Teaching Assistant
Department of Computer Science • *Colorado State University*
Fort Collins, CO • 2019 to Current
Undergraduate Course: Introduction to Machine Learning
Undergraduate Course: Introduction to Artificial Intelligence
Undergraduate Course: Discrete Structures and their Applications
Undergraduate Teaching Assistant
Department of Engineering • University of Tehran
Tehran, Iran • September 2014 - December 2014
Undergraduate Course: Differential Equations

EDUCATION

PhD - Computer Science • *Colorado State University* • *Expected Graduation: Dec 2023*
Fort Collins, Co
Master of Science - Computer Engineering • *University of Florida*
Gainesville, FL
Bachelor of Science – Engineering Science • *University of Tehran*
Tehran, IRAN

SKILLS

Programming Languages: Python, C/C++, Java
Big Data Technologies: Hadoop, Apache Spark, Apache Storm
Extensive Experience on Coding with Python Libraries: Scikit-Learn, Pandas, NumPy, SciPy, Seaborn, OpenCV, PyTorch, Keras, Tensorflow

AWARDS

IBM Tapia Scholarship, 2020
Graduate Student Achievement Award University of Florida, 2015-2017