Amin Fadaeinejad

Toronto, Ontario | aminfadaeinejad.edu@gmail.com | aminfadaei116.github.io | Linkedin

PROFILE SUMMARY

Dedicated Research Assistant with a strong academic background and over four years of combined experience in academia and industry. Specialized in leveraging generative AI for computer vision and graphic applications while contributing to Ubisoft R&D's La Forge team. Notable achievements include pioneering a generative pipeline for efficient face model creation for NPCs, significantly reducing production timelines.

CORE COMPETENCIES

- **Languages:** Python, C/C++, Matlab, SQL
- **Libraries:** Pytorch, Tensorflow, Keras, NumPy, Pandas, OpenCV, Scikit-learn
- **Tools:** Git, Hugging Face, OpenAI API, Cohere API

WORK EXPERIENCE

Research and Development Intern   Jan 2023 – March 2024
Ubisoft Toronto   Toronto, Ontario
- Designing a generative solution for constructing face models, reducing the time required for creating a face model by more than **90%**.
- Integrated different generative models in the pipeline, such as Variational Auto-Encoders (VAE) and Conditional GANs implemented in Pytorch.
- Published research papers at prestigious conferences such as **CVPR**.
- Executed model training for large-scale datasets on GPU cluster servers.
- Programmed an automated pipeline for artifact removal from a face model, eliminating human intervention and saving over **95%** of processing time using Pytorch.
- Provided bi-weekly reports to managers, delivering updates on project progress and key metrics.
- Facilitated knowledge transfer sessions for new interns, imparting essential skills and insights to accelerate their onboarding process.

Research Assistant   Sep 2021 – Present
BioMotion Lab (York University)   Toronto, Ontario
- Implemented a real-time pipeline for Novel View Synthesis for Telecommunication Systems with generative AI using Pytorch and OpenCV.
- Structured a real-time pipeline capable of swapping faces in a telecommunication system. [Demo]
- Communicated regularly by comprehensively documenting the latest findings (models, paper, algorithm) with supervisors.
- Stayed abreast of the latest advancements in the field by regularly reviewing and incorporating insights from newly published research papers into ongoing projects.

Research Assistant   Sep 2019 – Aug 2020
HARA AI (AI startup)   Tehran, Iran
- Collaborated with a team of Machine Learning Engineers to develop a Traffic violation verification system. [Project Page]
- Developed a deep network model, classifying color and vehicle type with **90.77%** accuracy.
- Integrated Pytorch models to OpenCV (C++) to reduce the execution time by **75%**.
- Maintained consistent communication with stakeholders through weekly reporting.

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Research Intern   Jun 2019 – Sep 2019
HARA AI (AI startup)   Tehran, Iran

- Contributed to the NLP research team to develop a speech-to-text (Persian Language) model for a smart call center.
- Processed 5GB of unstructured textual data gathered from scrapping the newspaper website.
- Applied feature extraction techniques, specifically Mel-Frequency Cepstral Coefficients (MFCC) and Mel spectrogram, to analyze audio signals using the Librosa python library.

PUBLICATION

- Dib, A., Hafemann, L. G., Got, E., Anderson, T., **Fadaeinejad, A**., Cruz, R. M. O., & Carbonneau, M.-A. (2024). MoSAR: Monocular Semi-Supervised Model For Avatar Reconstruction Using Differentiable Shading. In *Conference on Computer Vision and Pattern Recognition (CVPR)*. Retrieved from https://arxiv.org/abs/2312.13091, [Project Page]

PROJECTS

Image Segmentation using Cycle GAN [Web Page]

- Developed and trained a Cycle GAN model to perform image segmentation tasks using Pytorch.
- Applied transfer learning techniques to adapt the model to specific segmentation requirements.
- Communicated project findings through a comprehensive, well-documented report [link] and a compelling presentation [link].
- Established an informative web page for the Cycle GAN project, crafting a dedicated online platform accessible at [link].

Multi-Scale Attention Image Segmentation [Web Page]

- Implemented a Hierarchical Multi-Scale Attention model for image segmentation, inspired by the work of Andrew Tao et al.
- Utilized the Cityscapes dataset for semantic segmentation, emphasizing a focused approach to dataset usage to meet the project's objectives.
- Created a webpage [link] to improve accessibility and showcase key project insights more effectively.
- Overcamed computational challenges by training components separately and combining them, achieving notable results in terms of **51.4%** Mean IOU and **76.3%** Average Accuracy.

Anomaly Detection via Variational Autoencoder (VAE) [Web Page]

- Applied unsupervised anomaly detection techniques to hazelnut images using Variational Autoencoders (VAE), focusing on identifying regions that deviate from the dataset's normal distribution.
- Experimented with hyperparameter tuning, achieving an **F1-score** of **0.75** in model output assessment.
- Authored a detailed project report encompassing the background, methodology, and results of the Anomaly Detection via the Variational Autoencoder (VAE) initiative [link].
- Created a project webpage [link] for enhanced accessibility and presentation of key project insights.

EDUCATION

York University   Toronto, Ontario
Masters of Science in Electrical and Computer Engineering. GPA: 8.75/9 (A+);

University of Tehran   Tehran, Iran
Bachelor of Science Electrical Engineering, GPA: 18.59/20;
Minor in Computer Engineering, GPA: 17/20;