Sharif Amit Kamran

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EDUCATION

PhD. in Computer Science and Engineering   **CGPA**: 3.75 / 4.0
University of Nevada, Reno   Aug 2019 – Present

Ms. in Computer Science and Engineering   **CGPA**: 3.63 / 4.0
University of Nevada, Reno   Aug 2019 – Dec 2020

Bsc. in Computer Science and Engineering   **CGPA**: 3.45 / 4.0
BRAC University, Bangladesh   Jan 2013 – Apr 2017

WORK EXPERIENCE

Data, Analytics and Imaging Intern, Genentech Inc., USA   May 2022 – Present

- Working on fovea center detection from Optical Coherence Tomography Images using 3D CNNs.

Graduate Research Assistant, University of Nevada, Reno, USA   Aug 2019 – May 2022

- Working on NASA and DOD funded projects for identifying space-associated retinal degenerative diseases in astronauts and mapping enhanced visual perception using Multi-modal Generative Networks.
  Tools: Tensorflow, Pandas, NumPy, Keras, Weights & Biases, OpenCV.
  Project Codes: Vision-Transformer GAN, RV-GAN, Robust-Attention-Network, OpticNet-71

- Working on NIDDK (NIH) funded project on creating software and tools for automated extraction and quantification of calcium signals from calcium imaging videos using self-supervised learning.
  Tools: Tensorflow, Streamlit, NumPy, Keras, OpenCV, LabelMe, ImageJ.
  Project Codes: 4SM, STMapAuto

Intern, Personalized Healthcare Imaging, Genentech Inc., USA   May 2021 – Dec 2021

- Built a training and inference pipeline for a novel image-to-image translation GAN for synthesizing vendor-specific Optical Coherence Tomography (OCT) Images acquired from Zeiss and Spectralis.
  Tools: SimpleITK, Tensorflow, Slurm, SciPy, Pandas, OpenCV, Docker.

- Designed and evaluated multi-modal ML and CNN architectures for identifying between placebo and treatment arm for Ranibizumab (Lucentis) and Faricimab using Fundus and OCT-enface images. The drugs are for treating Wet Age-related Macular Degeneration (AMD) and Diabetic Macular Edema (DME).
  Tools: Tensorflow, Keras, Scikit-learn, NumPy, Pillow, Tensorboard, Docker.

- Built a multi-modal regression network for estimating the growth rate of Geographical Atrophy (GA).
  Tools: Tensorflow, Slurm, Scikit-learn, NumPy, Pandas, OpenCV, Tensorboard.

Researcher, Center for Cognitive Skill Enhancement, Dhaka, Bangladesh   May 2017 – Jun 2019

- Designed an efficient fully-convolutional architecture for semantic segmentation with 37% less parameters and $2\times$ inference speed. The model was benchmarked on Pascal-VOC, Pascal-context, and NYUDv2 data.
  Tools: Caffe, GCP, CoreML, NumPy, OpenCV, LabelMe.
  Project Code: Dilated-FCN

SELECTED PUBLICATIONS

BOOK CHAPTER

[1] A Comprehensive Set of Novel Residual Blocks for Deep Learning Architectures for Diagnosis of Retinal Diseases from Optical Coherence Tomography Images, 2020, *Deep Learning, Vol 2., p.25-48.*

JOURNALS

[1] New open-source software for subcellular segmentation and analysis of spatiotemporal fluorescence signals using deep learning, 2022, in *iScience*, 104277.

[2] Neuro-ophthalmic Imaging and Visual Assessment Technology for Spaceflight Associated Neuro-ocular Syndrome (SANS), 2022, in *Survey of Ophthalmology*.

[3] A Non-Invasive Approach to Monitor Anemia During Long-Duration Spaceflight with Retinal Fundus Images and Deep Learning, 2022, in *Life Sciences in Space Research*, Vo. 33, 69-71.

[4] A Novel Deep Learning Conditional Generative Adversarial Network for Producing Angiography Images from Retinal Fundus Photographs, 2021, in *Scientific Reports.*, 10, 21580.

[5] A High Throughput Machine-Learning Driven Analysis of Ca 2+ Spatio-temporal Maps, 2020, in *Cell Calcium, 91*, p.102260.

CONFERENCES

[1] ECG-ATK-GAN: Robustness against Adversarial Attacks on ECG using Conditional Generative Adversarial Networks. **Pre-print**

[2] Semi-supervised Conditional GAN for Simultaneous Generation and Detection of Phishing URLs: A Game theoretic Perspective. **Pre-print**

[3] ECG-Adv-GAN: Detecting ECG Adversarial Examples with Conditional Generative Adversarial Networks, in *20th International Conference on Machine Learning and Applications 2021 (ICMLA)*

[4] VTGAN: Semi-supervised Retinal Image Synthesis and Disease Prediction using Vision Transformers, in *Proceedings of the IEEE/CVF International Conference on Computer Vision Workshops 2021 (ICCVW).*

[5] RV-GAN: Retinal Vessel Segmentation from Fundus Images using Multi-scale Generative Adversarial Networks, in *24th International Conference on Medical Image Computing and Computer Assisted Intervention 2021 (MICCAI).*

[6] Attention2AngioGAN: Synthesizing Fluorescein Angiography from Retinal Fundus Images using Generative Adversarial Networks, in *25th IEEE International Conference on Pattern Recognition 2020 (ICPR).*

[7] Fundus2Angio: A Novel Conditional GAN Architecture for Generating Fluorescein Angiography Images from Retinal Fundus Photography, in *15th International Symposium on Visual Computing 2020 (ISVC).*

[8] Improving Robustness using Joint Attention Network For Detecting Retinal Degeneration From Optical Coherence Tomography Images in *27th IEEE International Conference on Image Processing 2020 (ICIP).*

[9] Optic-Net: A Novel Convolutional Neural Network for Diagnosis of Retinal Diseases from Optical Tomography Images, in *18th IEEE International Conference on Machine Learning and Applications 2019 (ICMLA).*

SKILLS

- **Programming Languages:** C++, Python, Bash (Shell Scripting), Matlab, HTML-CSS, Git, MySQL
- **Libraries & Programs:** OpenCV, Scikit-learn, SimpleITK, Numpy, Pandas, Caffe, Keras, Tensorflow, CoreML, ImageJ, Streamlit, LabelMe, VS Code, Tensorboard, Weights & Biases.
- **Systems:** Linux OS, Google Cloud Platform, Slurm, Docker, Singularity

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SELECTED COURSEWORKS

Algorithms, Linear Algebra, Statistics and Probability, Machine Learning, Deep Learning, Computer Vision, Image Processing, Database Systems

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ACADEMIC SERVICES

Reviewer
- IEEE Transactions on Medical Imaging (IF: 6.685)
- British Machine Vision Conference (BMVC) 2020 & 2021
- IEEE Winter Conference on Applications of Computer Vision (WACV) 2021 & 2022
- Translational Vision Science & Technology (IF: 2.37)
- Medical Physics (IF:4.071)
- Biomedical Optics Express (IF: 3.921)

REFERENCES

- **Dr. Alireza Tavakkoli**
  Associate Professor, Department of Computer Science and Engineering
  University of Nevada, Reno, NV, 89557
  Email: tavakkol@unr.edu

- **Dr. Sal Baker**
  Associate Professor, Department of Physiology and Cell Biology
  University of Nevada, Reno, NV, 89557
  Email: sabubaker@med.unr.edu