

# Sharif Amit Kamran

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## EDUCATION

<b>PhD. Candidate in Computer Science and Engineering</b>	<b>CGPA: 3.75 / 4.0</b>
University of Nevada, Reno	Aug 2019 – May 2023 (Expected)
<b>Ms. in Computer Science and Engineering</b>	<b>CGPA: 3.63 / 4.0</b>
University of Nevada, Reno	Aug 2019 – Dec 2020
<b>Bsc. in Computer Science and Engineering</b>	<b>CGPA: 3.45 / 4.0</b>
BRAC University, Bangladesh	Jan 2013 – Apr 2017

## WORK EXPERIENCE

<b>Graduate Research Assistant</b> , University of Nevada, Reno, USA	Aug 2019 – Present
<ul style="list-style-type: none"><li>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. <b>Tools:</b> Tensorflow, Pandas, NumPy, Keras, Weights &amp; Biases, OpenCV. <b>Project Codes:</b> <a href="#">Vision-Transformer GAN</a>, <a href="#">RV-GAN</a>, <a href="#">Robust-Attention-Network</a>, <a href="#">OpticNet-71</a></li><li>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. <b>Tools:</b> Tensorflow, Streamlit, NumPy, Keras, OpenCV, LabelMe, ImageJ. <b>Project Codes:</b> <a href="#">4SM</a>, <a href="#">STMapAuto</a></li></ul>	
<b>Data, Analytics and Imaging Intern</b> , Genentech Inc., USA	May 2022 – Aug 2022
<ul style="list-style-type: none"><li>Built a 3D deep learning model for foveal-center detection from Optical Coherence Tomography Images. <b>Tools:</b> SimpleITK, Tensorflow, Slurm, Pandas, Matplotlib, Pillow, NumPy.</li><li>Developed and deployed retinal fluid area and retinal layer thickness interpolation pipeline.</li></ul>	
<b>Intern, Personalized Healthcare Imaging</b> , Genentech Inc., USA	May 2021 – Dec 2021
<ul style="list-style-type: none"><li>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. <b>Tools:</b> SimpleITK, Tensorflow, Slurm, SciPy, Pandas, OpenCV, Docker.</li><li>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). <b>Tools:</b> Tensorflow, Keras, Scikit-learn, NumPy, Pillow, Tensorboard, Docker.</li><li>Built a multi-modal regression network for estimating the growth rate of Geographical Atrophy (GA). <b>Tools:</b> Tensorflow, Slurm, Scikit-learn, NumPy, Pandas, OpenCV, Tensorboard.</li></ul>	
<b>Researcher</b> , Center for Cognitive Skill Enhancement, Dhaka, Bangladesh	May 2017 – Jun 2019
<ul style="list-style-type: none"><li>Designed an efficient fully-convolutional architecture for semantic segmentation with 37% less parameters and 2× inference speed. The model was benchmarked on Pascal-VOC, Pascal-context, and NYUDv2 data. <b>Tools:</b> Caffe, GCP, CoreML, NumPy, OpenCV, LabelMe. <b>Project Code:</b> <a href="#">Dilated-FCN</a></li></ul>	

## SELECTED PUBLICATIONS

### 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<sup>2+</sup> Spatio-temporal Maps, 2020, in *Cell Calcium*, 91, p.102260.

## CONFERENCE PROCEEDINGS

- [1] Feature Representation Learning for Robust Retinal Disease Detection from Optical Coherence Tomography Images, in *MICCAI 9th Ophthalmological Imaging Analysis Workshop 2022 (MICCAI-OMIA)*
- [2] ECG-ATK-GAN: Robustness against Adversarial Attacks on ECG using Conditional Generative Adversarial Networks. *MICCAI 1st Workshop on Application of Medical AI 2022 (MICCAI-AMAI)*
- [3] 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)*.
- [4] 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)*.
- [5] ECG-Adv-GAN: Detecting ECG Adversarial Examples with Conditional Generative Adversarial Networks, in *20th International Conference on Machine Learning and Applications 2021 (ICMLA)*
- [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)*.

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## SKILLS

- **Imaging Expertise:** OCT, Fundus, Fluorescein Angiography, MRI, PET, CT.
- **Programming Languages:** C++, Python, Bash (Shell Scripting), Matlab, HTML-CSS, Git, MySQL
- **Libraries & Programs:** OpenCV, Scikit-learn, Spark, SimpleITK, Numpy, Pandas, Caffe, Keras, Tensorflow, CoreML, ImageJ, Streamlit, LabelMe, VS Code, Tensorboard, Weights & Biases.
- **Systems:** Linux OS, Google Cloud Platform, Slurm, AWS, 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)

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## 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  
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