Sharif Amit Kamran

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EDUCATION

PhD. in Computer Science and Engineering — **CGPA**: 3.7 / 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

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, *Book Chapter, in Deep Learning, Volume 2., p.25-48, Springer.*

JOURNALS

[1] CalciumGAN: Segmenting Spatio-temporal map using multi-scale generative adversarial networks, 2021, in *Elife*. **Under Review**

[2] Denoising Calcium Signals (Spatial-temporal Maps) using Mathematical Noise Modeling, 2021, in *IScience*. **Under Review**

[3] Neuro-Ophthalmic Imaging Modalities, Visual Assessment, and Machine Learning for Spaceflight Associated Neuro-Ocular Syndrome (SANS): Past, Present, and Future, 2021, in *Survey of Ophthalmology*.

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

[2] 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).*

[3] 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).*

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

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

[6] 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).*

[7] 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).*

[8] Total Recall: Understanding Traffic Signs using Deep Hierarchical Convolutional Neural Networks, in *21st IEEE International Conference on Computer and Information Technology 2018 (ICCIT).*

[9] Efficient Yet Deep Convolutional Neural Networks for Semantic Segmentation, in *IEEE International Symposium on Advanced Intelligent Informatics 2018 (SAIN).*

WORK EXPERIENCE

Product Development Intern, Genentech Inc. — May 2021 – Present
South San Francisco, CA, USA

Graduate Research Assistant, University of Nevada, Reno — Aug 2019 – Present
Department of Computer Science and UNR school of Medicine

Co-Founder, Bengali.AI — Apr 2018 – Present
Dhaka, Bangladesh

Mentor, Research & Engineering Apprenticeship Program (REAP) — Jun 2020 – Aug 2020
US Army Educational Outreach Program

Researcher, Center for Cognitive Skill Enhancement — May 2017 – Jun 2019
Independent University Bangladesh (IUB), Dhaka, Bangladesh.

SKILLS

- **Programming Languages:** C++, Python, Java, Bash (Shell Scripting), Matlab, HTML-CSS, Git, PHP
- **Libraries:** OpenCV, Scikit-learn, Numpy, Caffe, Keras, Tensorflow, PyTorch, CoreML, ImageJ, Streamlit.
- **Systems:** Linux OS, Google Cloud Platform (Compute Engine & App Engine), Slurm

PROJECTS

Multi-modal Calcium Imaging Quantification
- Working on a multi-modal GAN for detecting calcium transient events using temporal and visual information from videos and quantifying calcium event information.

Vision-Transformer GAN for Sytnehsis and Detection
- Built a novel Vision-transformer based Generative adversarial networks for synthesizing Fluroscien Angiography from Retinal Fundus Photography and classification of Retinal Degenerative Diseases using limited data.

Retinal Vessel Segmentation using GAN
- Created a novel GAN based architecture for state-of-the-art Retinal Vessel Segmentation utilizing a novel weighted feature-matching loss. The work acheived top AUC score in DRIVE, CHASE and STARE Retinal Segmentation Data-set.

Calcium Event Quantification using GAN
- Proposed a new conditonal GAN for segmenting calcium events from Spatio-temporal images and worked with a team to build a GUI using Stream-Lit for quantifying these events in terms of spatial spread, duration, area and interval between events.

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)

External Reviewer
- International Conference on Robotics and Automation (ICRA) 2019
- Sensors (IF: 3.275)

Graduate Teaching Assistant — Jan 2020 – May 2020
- CS491/CS691 Deep Learning

AWARDS & GRANTS

MICCAI 2021 Student Travel Award, — Jun 2021
- The Medical Image Computing and Computer Assisted Interventions Society

Outstanding Graduate Student, — May 2021
- GSA Spring Awards 2021, University of Nevada, Reno

Grant, National Aeronautics and Space Administration (NASA) — Oct 2020 – Sep 2021
- **Role:** Graduate Research Assistant

- **Program:** Human Exploration Research Program
- **Title:** A Non-intrusive Ocular Monitoring Framework to Model Ocular Structure and Functional Changes due to Long-term Space flight
- **Primary Investigator:** Dr. Alireza Tavakkoli

Outstanding Graduating Graduate Student, Dec 2020
- GSA Fall Awards 2020, University of Nevada, Reno

Graduate Dean's Award, Aug 2019 – May 2020
- Graduate School, University of Nevada, Reno

Best Paper Award, Aug 2018
- 2018 International Symposium on Advanced Intelligent Informatics (SAIN)

SELECTED COURSEWORKS

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

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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
  University of Nevada, Reno, NV, 89557
  Email: sabubaker@med.unr.edu