Sharif Amit Kamran

Linkedin: www.linkedin.com/in/sharif-a-b15004105/
GitHub: github.com/SharifAmit
Personal Website: www.sharifamit.com

Email : skamran@nevada.unr.edu
Mobile : +1-929-418-7223

Education

- **University of Nevada, Reno** — Reno, NV, USA
  PhD Candidate in Computer Science — *Aug 2019 - May 2023*
- **University of Nevada, Reno** — Reno, NV, USA
  Master of Science in Computer Science — *Aug 2019 - Dec 2020*
- **BRAC University** — Dhaka, Bangladesh
  Bachelor of Science in Computer Science — *Jan 2013 - Apr 2017*

Skills

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

Work Experience

- **University of Nevada, Reno** — Reno, NV
  Graduate Research Assistant - Prof. Alireza Tavakkoli and Prof. Sal Baker — *August 2019 - Present*
  - **Space-associated Neuroocular Syndrome**: Working on NASA 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.
    Codes: Vision-Transformer GAN, RV-GAN, Robust-Attention-Network,OpticNet-71
  - **Calcium Event Extraction and Quantificaiton**: 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.
    Codes: 4SM, STMapAuto
  - **Breast MRI Segmentation**: Working on a GAN-based architecture for benign and malignant breast tissue segmentation from MRI images.
- **Genentech, Inc.** — South San Fransisco, CA
  Data, Analytics and Imaging Intern — *May 2022 - Aug 2022*
  - **Foveal Center Detection**: Built a 3D deep learning model for foveal-center detection from Optical Coherence Tomography Images. Submitted a provincial patent and published an abstract in OSA Fall Vision meeting 2022.
    Tools: SimpleITK, Tensorflow, Slurm, Pandas, Matploblib, Pillow, NumPy.
  - **Retinal Attribute Measurement** : Developed and deployed retinal fluid area and retinal layer thickness interpolation pipeline using volumetric OCT images. The quantification module has been incorporated and deployed in Flywheel for usage by clinicians.
    Tools: Pandas, JSON, Pillow, NumPy.
- **Genentech, Inc.** — South San Fransisco, CA
  Data Science Intern — *May 2021 - Dec 2021*
  - **Vendor-specific OCT GAN**: 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.
  - **Treatment-arm Prediction using Deep-learning**: 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.
  - **GA growth prediction**: Built a multi-modal regression network for estimating the growth rate of Geographical Atrophy.
    Tools: Tensorflow, Slurm, Scikit-learn, NumPy, Pandas, OpenCV, Tensorboard.

Selected Publications

- [**J1**]: **Sharif A. Kamran**, Khondker F. Hossain, Hussein Moghnieh, Sarah Riar, Allison Bartlett, Alireza Tavakkoli, Kenton M. Sanders, and Salah A. Baker, New open-source software for subcellular segmentation and analysis of spatiotemporal fluorescence signals using deep learning, 2022, in *iScience.*
- [**J2**]: Joshua Ong, Alireza Tavakkoli, Nasif Zaman, **Sharif A. Kamran**, Ethan Waisberg, Nikhil Gautam and Andrew G. Le, Terrestrial health applications of visual assessment technology and machine learning in spaceflight associated neuro-ocular syndrome, 2022, in *npj Microgravity.*
- [**J3**]: **Sharif A. Kamran**, Alireza Tavakkoli, Khondker F. Hossain and Stewart L. Zuckerbroad, A Novel Deep Learning Conditional Generative Adversarial Network for Producing Angiography Images from Retinal Fundus Photographs, 2021, *Scientific Reports.*
- [**J4**]: ,Wesley Leigh, Guillermo Del Valle, **Sharif A. Kamran**, Bernard T Drumm, Alireza Tavakkoli, Kenton M Sanders, Sal Baker A High Throughput Machine-Learning Driven Analysis of Ca2+ Spatio-temporal Maps, 2020, *Cell Calcium.*
- [**C1**]: **Sharif A. Kamran**, Khondker F. Hossain, Alireza Tavakkoli, Stewart L. Zuckerbrod and Salah A. Baker, Feature Representation Learning for Robust Retinal Disease Detection from Optical Coherence Tomography Images, in *MICCAI 2022.*
- [**C2**]: **Sharif A. Kamran**, Khondker F. Hossain, Alireza Tavakkoli, Stewart L. Zuckerbrod, and Salah A. Baker, VTGAN: Semi-supervised Retinal Image Synthesis and Disease Prediction using Vision Transformers, in *ICCV 2021.*
- [**C3**]: **Sharif A. Kamran**, Khondker F. Hossain, Alireza Tavakkoli, Stewart L. Zuckerbrod, Kenton M. Sanders and Salah A. Baker, RV-GAN: Segmenting Retinal Vascular Structure in Fundus Photographs Using a Novel Multi-scale Generative Adversarial Network, in *MICCAI 2021.*
- [**C4**]: **Sharif A. Kamran**, Khondker F. Hossain, Alireza Tavakkoli, Stewart L. Zuckerbrod, Attention2AngioGAN: Synthesizing Fluorescein Angiography from Retinal Fundus Images using Generative Adversarial Networks, in *ICPR 2020.*
- [**C5**]: **Sharif A. Kamran**, Alireza Tavakkoli, Stewart L. Zuckerbrod, Improving Robustness using Joint Attention Network For Detecting Retinal Degeneration From Optical Coherence Tomography Images, in *ICIP 2020.*

Honors and Awards

- Received Best Reviewer Award at 32nd British Machine Vision Conference (BMVC) 2021.
- Received MICCAI Student Travel Award 2021, given to 50 students out of thousands of presenters.
- One of the two CS graduate student out of 4,000+ students, to receive Graduate Dean's Merit Scholarship for 2019-2020.
- Received Outstanding Graduate Student Award Spring'21 and Spring'22 by University of Nevada, Reno.

Academic Services

- **Reviewer**: IEEE TMI, Medical Physics, Biomedical Optics Express, TVST, BMVC'20-'21, WACV'21-'22.
- **Graduate Mentor**: US Army Educational Outreach Program, Fall'20.
- **Student Organizer**: International Sympousium on Visual Computing, ISVC'20, ISVC'22.
- **Session Speaker**: Semantic Segmenation using Deep Learning, Bengali.AI Research Papers Weekly, Session 6, 2018.
- **Teaching Assitant**:
    - CS791: Mass Detection in Mammograms, Spring'22 and Fall'22
    - CS687/487: Fundamentals of Deep Learning, Spring'21 and Spring'20, University of Nevada, Reno
- **Workshop Instructor**:
    - Deep Learning for Computer Vision, Bengali.Ai CV Challenge 2018.
    - Advanced Micro-controller Programming, Center for Cognitive Skill Enhancement, 2017.

References

- Available upon request.