

# Sharif Amit Kamran

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Reno, Nevada

US Permanent Resident

## WORK EXPERIENCE

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- **Radiology AI Postdoctoral Fellow** Cambridge, MA  
*Johnson & Johnson Innovative Medicine* May 2023 - Present
  - **Automated Immuno-dermatology Disease Prediction:** Built an interpretable transformer-based weakly supervised learning model for predicting psoriasis, which achieves > 90% AUC for severity classification. Moreover extended this work to predict absolute PASI with > 85% Intraclass correlation coefficient (ICC). Submitted a provincial patent. Published four abstracts (EADV2024 & ESDR2024) and one technical manuscript (ISBI 2025).  
**Tools:** PyTorch, Pandas, NumPy, OpenCV, Scikit-learn
- **Graduate Research Assistant** Reno, NV  
*University of Nevada, Reno* August 2019 - May 2023
  - **Space-associated Neuroocular Syndrome (SANS):** Developed three novel image-to-image translation generative adversarial networks (GAN) for Fundus to Fluorescein Angiography image generation. Also, built a deep convNet for identifying SANS degenerative disease in astronauts achieving > 82% F1-score.  
**Tools:** Tensorflow, Pandas, NumPy, Matplotlib, OpenCV.  
**Codes:** [SwinFSR](#), [Vision-Transformer GAN](#), [RV-GAN](#), [Robust-Attention-Network](#), [OpticNet-71](#)
  - **Calcium Video Event Extraction and Quantification:** Developed a first-of-its-kind software for automated tracking, segmentation, extraction, and quantification of sub-cellular calcium events from videos using a novel pipeline consisting of semi-supervised GAN and kernel-based (pseudo-labels trained) trackers.  
**Tools:** Tensorflow, Streamlit, NumPy, Keras, OpenCV, LabelMe, ImageJ.  
**Codes:** [4SM](#), [STMapAuto](#)
  - **2D and 3D Medical Image Segmentation:** Developed a novel transformer-based architecture for benign and malignant breast micro-mass segmentation from MRI and Ultrasound images, achieving 3-4% improvement over current state-of-the-art. Also, developed an attention-based Swin-Transformer with a feature-similarity loss for 3D OCT fluid segmentation, achieving a 72% Area-under-the-curve score.  
**Codes:** [SwinVFTR](#)  
**Tools:** PyTorch, Monai, NumPy, SimpleITK.
- **Data, Analytics and Imaging Intern** South San Fransisco, CA  
*Genentech, Inc.* May 2022 - Aug 2022
  - **3D Foveal Center Detection:** Built a 3D deep learning model for foveal-center detection from Optical Coherence Tomography Images with a mean absolute score of less than 1 mm. Submitted a provincial patent.  
**Tools:** SimpleITK, Tensorflow, Slurm, Pandas, Matplotlib, 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.
- **Data Science Intern** South San Fransisco, CA  
*Genentech, Inc.* 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 achieving more than 80% F1-score. 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 with a low absolute error.  
**Tools:** Tensorflow, Slurm, Scikit-learn, NumPy, Pandas, OpenCV, Tensorboard.

## EDUCATION

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

## SKILLS

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- **Programming Languages::** Python, R, C++, Bash (Shell Scripting), Matlab, Git.
- **Imaging Expertise::** X-rays, OCT, Fundus, Fluorescein Angiography, MRI, PET, CT, Ultrasound.
- **Libraries & Programs:** PyTorch, Huggingface, Monai, OpenCV, NumPy, Tensorflow, Scikit-learn, SimpleITK, VTK, Pandas, ImageJ, Streamlit, LabelMe, Spark, Tensorboard, Weights & Biases.
- **Systems & Cloud-computing:** Slurm, Linux OS, Google Cloud Platform, AWS, Docker, Singularity.

## SELECTED PUBLICATIONS

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### Journals:

- [J1]: **Sharif Amit Kamran**, Khondker Fariha Hossain, Joshua Ong, Nasif Zaman, Ethan Waisberg, Phani Paladugu, Andrew G Lee, Alireza Tavakkoli, [SANS-CNN: An automated machine learning technique for spaceflight associated neuro-ocular syndrome with astronaut imaging data](#), 2024, *npj Microgravity, Nature*.
- [J2]: **Sharif Amit Kamran**, Khondker Fariha Hossain, Joshua Ong, Ethan Waisberg, Nasif Zaman, Salah A. Baker, Andrew G. Lee, MD, Alireza Tavakkoli, [FA4SANS-GAN: A Novel Machine Learning Generative Adversarial Network to Further Understand Ophthalmic Changes in Spaceflight Associated Neuro-Ocular Syndrome \(SANS\)](#), 2024, *Ophthalmology Science, Elsevier*.
- [J3]: **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, Cell Press*.
- [J4]: **Sharif A. Kamran**, Alireza Tavakkoli, Khondker F. Hossain and Stewart L. Zuckerbrod, [A Novel Deep Learning Conditional Generative Adversarial Network for Producing Angiography Images from Retinal Fundus Photographs](#), 2021, *Scientific Reports, Nature*.

### Conference Proceedings:

- [C1]: **Sharif Amit Kamran**, Molly Lucas, Brendon Lutnick, Chaitanya Parmar, Basudha Pal, Asha Shah, David Apfel, Steven Fakharzadeh, Lloyd Miller, Stephen Yip, Kristopher Standish, Gabriela Oana Cula, [PSO-NET: Development of an Automated Psoriasis Assessment System Using Attention-Based Interpretable Deep Neural Networks](#), in *IEEE ISBI 2025*.
- [C2]: Khondker Fariha Hossain\*, **Sharif Amit Kamran\***, Joshua Ong, Andrew G Lee, Alireza Tavakkoli, [Revolutionizing Space Health \(Swin-FSR\): Advancing Super-Resolution of Fundus Images for SANS Visual Assessment Technology](#), in *MICCAI 2023*.
- [C3]: **Sharif Amit Kamran**, Khondker Fariha Hossain, Alireza Tavakkoli, George Bebis, Sal Baker, [SWIN-SFTNet: Spatial Feature Expansion and Aggregation using Swin Transformer For Whole Breast micro-mass segmentation](#), in *IEEE ISBI 2023*.
- [C5]: **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*.
- [C6]: **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*.

## ONLINE COURSES & CERTIFICATIONS

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- **Deep Learning Specialization:** Coursera, Credential No.: NM9SMAJW9USM
- **Applied Machine Learning in Python:** Coursera, Credential No.: LS77LUGT2WBK
- **AI for Medical Diagnosis:** Coursera, Credential No.: L3VQWTDTAB9T
- **Group 1 Social Behavioral Research Investigators and Key Personnel Group (IRB):** CITI Program: 44175128

## ACADEMIC SERVICES

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- **Graduate Instructor:** CS687/CS487 : Fundamentals of Deep Learning, Spring'23, University of Nevada, Reno.
- **Reviewer:** IEEE TMI, JAMA Ophthalmology, Medical Physics, Biomed Optics Express, TVST, BMVC2020-2021, WACV2021-2022, MICCAI 2024-2025.
- **Teaching Assistant:** CS791: Mass Detection in Mammograms, Spring'22 and Fall'22, University of Nevada, Reno.
- **Teaching Assistant:** CS687/487: Fundamentals of Deep Learning, Spring'21 and Spring'20, University of Nevada, Reno.