Harshita Kukreja

Email: hk3203@nyu.edu | harshitakukreja8 | Harshita Kukreja | Bay Area, CA, USA

Education

New York University, Courant Institute of Mathematical Sciences — **New York, NY**
MS Computer Science [GPA: 3.81/4.0] — Sep 2021 – May 2023

Indira Gandhi Delhi Technical University for Women — **Delhi, India**
B.Tech Computer Science and Engineering [Aggregate: 81.3%] — Aug 2016 – July 2020

Experience

Software Engineer — **San Francisco, CA**
UCSF Health — May 2024 - Present
- Improved radiation target volume planning using a **SegFormer3D** segmentation pipeline in PyTorch achieving a 43.34% increase in DICE score over standard-of-care.
- Engineered **multimodal large language model** (LLM) pipeline to predict, store and process outputs into MRI labels from MRI series metadata and slices.
- Designed an ML-powered (flood-fill) pipeline to report features of small volume microbleed lesions leveraging seed annotations, reducing time per scan from **hours to minutes**.

Software Engineer — **Baltimore, MD**
University of Maryland Medical Center — Nov 2023 - Feb 2024
- Improved **Multi-Center Generalizability of GAN**-Based non-FS to FS MR scan generation using **Federated Learning** with Pix2Pix architecture achieving 36.9% improvement in SSIM over FastMRI.
- Conducted **EDA** on the impact of temperature variations on health disparities using radiology examination metadata.

Machine Learning Research Associate — **New York, NY**
NYU Langone Health — Sep 2022 - Nov 2023
- Built a U-Net based approach to **generate 3D images** of contrast-enhanced MRIs from non-contrast scans orchestrated using **PyTorch Lightning**.
- Validated the approach on NYUMets database achieving 0.74 SSIM score.

Software Engineer Intern — **Boston, MA**
Tech For Good Inc. — Jun 2022 - Aug 2022
- Instrumented LeCAR **Machine Learning-based caching system** on their Mission Uplink platform increasing cache-hit ratio by 10% reducing network latency and enhancing internet connectivity for underserved communities.

Machine Learning Research Associate — **Delhi, India**
Netaji Subhas University of Technology — Jun 2019 - Aug 2021
- Optimized **denoising** on iris and palmprints by reducing Non-Local Means filter **time by 75%**, achieving PSNR up to 40.86 and 98.39% classification accuracy with a pretrained ResNet50 in PyTorch.
- Developed DeepCrypt, integrating **CNNs with cryptographic hashing** to enable secure cloud storage of biometric templates, achieving 99.56% authentication accuracy.
- Built a multimodal biometric authentication system using **feature fusion** leveraging iris and face modalities orchestrated on **TensorFlow** and **Keras**, achieving 99.8% accuracy while mitigating security limitations.

Projects

Semi Supervised DBSCAN
- Implemented a Semi-Supervised version of the unsupervised DBSCAN algorithm using Prim's algorithm.
- Open Sourced the scikit-learn API compliant implementation on GitHub.

Promotions Resource in an E-Commerce Website
- Designed the back-end for the Promotions team of an eCommerce website as a collection of **REST API** services for a client.
- Worked on **Docker** containers with **Kubernetes CI/CD** pipelines to integrate code with **nosetests** before deploying it, simulating an Agile development with biweekly sprints.

Autism Spectrum Disorder Screening using Predictive Analytics
- Performed **EDA** on the Autism dataset using **Tableau**, **R**, **Pandas**, and **Matplotlib**
- Applied Logistic Regression, Random Forest, and Decision Tree models, with Random Forest achieving a **99% F1-score**

Skills

Languages	Python, Java, C++, C, R, SQL, HTML, CSS, Shell Scripting
ML	PyTorch, PyTorchLightning, TensorFlow, Keras, Jupyter, NumPy, Pandas, scikit-learn, Matplotlib, Seaborn, Tableau, pyalfe, Vision Transformers, Multi-modal LLM
Software	Linux, Git, Agile, CI/CD, Docker, Kubernetes, SQLAlchemy, A/B Testing, IBM Cloud

Publications

Detection in Progress - A Multimodal Segmentation-based Approach for Predicting Glioblastoma Recurrence. ***Harshita Kukreja*** *et al. — Neural Information Processing Systems (NeurIPS Imageomics Workshop)* 2025

Transformer-Based Approach to Predict Glioblastoma Recurrence from MRSI and Diffusion MRI for Personalizing Radiation Planning. ***Harshita Kukreja*** *et al. — Society for Neuro-Oncology* (Abstract) 2025

Defining Radiation Target Volumes with AI-Driven Predictions of Glioma Recurrence from MRSI, Diffusion MRI, and Transformers. ***Harshita Kukreja*** *et al. — International Society for Magnetic Resonance in Medicine* (Abstract) 2025

Large Language Model Based Identification of Brain MRI Sequences. *Radhika Bhalerao,* ***Harshita Kukreja*** *et al. International Society for Magnetic Resonance in Medicine* (Abstract) 2025

Longitudinal voxel-wise analysis using a novel deep-learning-derived pKI-67 for early prediction of glioblastoma patients prognosis. *Nate Tran,* ***Harshita Kukreja*** *et al. — International Society for Magnetic Resonance in Medicine* (Abstract) 2025

Improving Multi-Center Generalizability of GAN-Based Fat Suppression using Federated Learning. – *Pranav Kulkarni, Adway Kanhere,* ***Harshita Kukreja*** *et al. – Medical Imaging with Deep Learning* (Poster Presented) [Link] 2024

Artificial Intelligence Analysis of Social Media Posts on Glucagon-Like-Peptide-1 Receptor Agonists (GLP-1RA) – *Aamir Javaid,* ***Harshita Kukreja*** *et al. – Journal of the American College of Cardiology* [Link] 2024

An Evaluation of Denoising Techniques and Classification of Biometric Images Based on Deep Learning – *Shefali Arora, Ruchi Mittal,* ***Harshita Kukreja*** *et al. – Multimedia Tools and Applications, Springer* [Link] 2022

Privacy Enhancement in Biometric Systems by Template Protection using Deep Learning – ***Harshita Kukreja*** *et al. – International Journal of Scientific Research in Computer Science and Engineering* [Link] 2021

Privacy Protection of Biometric Templates Using Deep Learning – *Shefali Arora, M.P.S. Bhatia,* ***Harshita Kukreja*** *et al. – Innovations in Cyber Physical Systems, Springer* [Link] 2021

A Multimodal Biometric System for Secure User Identification Based on Deep Learning – *Shefali Arora, M.P.S. Bhatia,* ***Harshita Kukreja*** *– International Conference on Information and Communication Technology, Springer* [Link] 2021

Academic Service

Reviewer

NeurIPS Imageomics Workshop 2025

Teaching Assistant

Handled grading of assignments and tutoring of students, created and hosted hands-on exercises, and feedback-sessions.

DS-UA 301 — Advanced Topics in ML/DL (Prof. Parijat Dube) Spring 2023
CSCI-UA 472 — Artificial Intelligence (Prof. Ernest Davis) Spring 2023
CSCI-UA 310 — Basic Algorithms (Prof. Vladimir Podolskii) Spring 2023
CSCI-UA 310 — Basic Algorithms (Prof. Marshall Ball) Fall 2022
CSCI-GA 2271 — Computer Vision (Prof. Rob Fergus) Fall 2022
CSCI-GA 3033 — Introduction to Deep Learning Systems (Prof. Parijat Dube) Fall 2022