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EDUCATION

Degree	Institution	CGPA/CPI	Duration
M.Sc. (CS)	Arizona State University (ASU)	4.22/4.00	August 2023-Present
M. Tech. (EE)	Indian Institute of Technology Gandhinagar (IITGn)	8.71/10.00	2019-2021
B. Tech. (EE)	Institute of Technology, Nirma University	8.41/10.00	2014-2018

RESEARCH INTERESTS

Deep Learning, Machine Learning, Data Science, Computer Vision, Graph Neural Networks, Generative Adversarial Networks (GANs), GenAI

PROFESSIONAL EXPERIENCE

Deep Learning Researcher | Geometry Systems Laboratory, ASU, Tempe ***November 2023-Present***
- Contributing to the ongoing research to aid the medical diagnosis with the help of Image Processing and Deep learning.
- Overlooking projects in fMRI and Eye Fundus Image Enhancement using GANs.

Systems Engineer | Tata Consultancy Services Ltd., India ***August 2021-July 2023***
- Responsible for performance analysis of web services before code deployment to production.
- Demonstrated strong leadership skills by managing a team of 5 individuals and coordinating with stakeholders.
- Implemented a Gatling-based performance testing framework, resulting in a reduction of over 50 company hours per project cycle.
- Accomplished a 10% reduction in project costs by minimizing reliance on commercial load generators.
- Enhanced project management skills by utilizing tools such as JIRA and Confluence to track the product roadmap.

Graduate Teaching Assistant | Indian Institute of Technology Gandhinagar, India ***August 2020-May 2021***
- Empowered over 150 students in Introduction to Computing, and Signals, Systems and Networks.
- Meticulous assignment preparation and evaluation, fostering academic growth and problem-solving abilities.
- Conducted one-on-one guidance and support to 60+ students, resulting in a 30% increase in student performance.

Graduate Engineer Trainee | Tata Chemicals Ltd., India ***August 2018-July 2019***
- Trained to operate the Electrical Support division in the Chemical Industry.
- Managed team of 10 including machine operators, maintenance staff, and junior engineers.
- Implemented rigorous Industrial Safety measures, resulting in zero fire or electrical accidents within my team.

INTERNSHIP EXPERIENCE

Computer Vision Intern | Center for Development of Advanced Computing (C-DAC), India ***September 2020-May 2021***
- Aided research focused towards developing novel techniques for human face age progression mapping.
- Demonstrated strong communication skills, adeptness in data collection, and advanced analytical skills.

Winter Intern | Capgemini Pvt Ltd., India ***December 2019-January 2020***
- Deployed an Object detection algorithm on RaspberryPi to solve a traffic monitoring problem.
- Improved the detection accuracy to 95.7% while diminishing the detection time by 60%.
- Designed the pipeline to store the detection details in private cloud.

ACADEMIC PROJECTS

Eye-Fundus Retinal Image Quality Enhancement.
- Devised a GenAI based framework to solve 2 challenges: Removing artifacts, preserving blood vessels.
- Trained in unsupervised fashion and evaluated using 2 downstream tasks: Quality classification, Lesion segmentation.
- Improved the performance of state-of-the-art models by 5% and capable of eradicating 6 different types of degradations.

Polyp Segmentation in Gastrointestinal Tract Endoscopy using Image to Image Translation.
- Utilized Image-to-image translation technique to segment polyps in Endoscopy images to aid diagnosis and report generation.
- Deployed PyTorch framework and reduced the size of the trained model by 30% compared to the benchmarked models.
- Implemented CUDA based framework to utilize the Nvidia GPUs and reduced the training time by more than 40+ hours.
- The technique outperformed the SOTA methods by obtaining Sensitivity and Specificity of 99.38% and 99.48% respectively.

Mapping Human Face Age Progression using Contextual loss.
- Leveraged GenAI to map Human face age progression and synthesis aging features on young face images.
- Curated and annotated an extensive dataset of over 160,000+ facial images for robust model training.
- Preserved identity features, works on faces with occlusions (hat, glasses) and outputs tested on SOTA age estimators.
- Research showcases promising applications in both forensic and entertainment domains.

Gender and Direction classification of Chest X-ray images using Vision based Transformers.
- Trained the PyTorch based Swin Transformer model on 247 X-ray images for the classification task.
- Implemented Grad-CAM technique to analyze the decision masking capability of the Neural Networks.
- Attained 97.5% accuracy for Direction classification, and 93.3% accuracy during Quantitative Analysis.

Multi-shape classification of 3D meshes using MeshCNN.
- Utilized MeshCNN to classify more than 10 mesh objects from SHREC dataset on Google Colaboratory GPUs.
- Designed experiments to improve the accuracy of the model and achieved the accuracy of 100% for the test cases.

Smoothening of the 3D mesh objects using Half-Edge data structures.

- Deployed Python framework for the loop-subdivision algorithm to reduce the sharp corners and edges for the 3D object.
- Improved the smoothness factor of the object by 50% per iteration added feature to save the output in user defined format.
- Efficiently handled data using Half-edge data structure and improved the computation time by the factor of 45%.

RELEVANT COURSEWORK

3D Computer Vision, Digital Image Processing, Medical Imaging Systems, Advanced Computer Graphics, Natural Language Processing, Data Mining, Machine Learning, Digital Signal Processing, Cloud Computing.

SKILL SUMMARY

Programming Languages: Python, C/C++, Java, MATLAB
Tools, Databases, and OS: Windows, Linux/Unix, SQL, Azure DevOps, AWS, Git, GitHub.
Libraries: Numpy, Pandas, PyTorch, Keras, TensorFlow, Caffe, OpenCV, CUDA, Scikit-learn.
Soft Skills: People Management, Teamwork, Academic Writing, Networking skills

HONORS & ACHIEVEMENTS

- GATE Institute Fellowship for 2 years by MHRD, India – M. Tech. at IITGn.
- Received Director's certificate of Honor – B. Tech. at Nirma University.
- Best Design Award, SAE Aerodesign Challenge 2016.
- 4th position all over India, SAE Aerodesign Challenge 2017.

EXTRA-CURRICULAR ACTIVITIES

- **Co-founder**, Team Arrow, SAE India Chapter, Nirma University.
- **Lead Volunteer**, Tata Chemicals Society for Rural Development (TCSRD), India.