

SHREY THAKKAR

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Education

Master of Computer Science

Aug. 2023 – May 2025

Arizona State University, Tempe, Arizona

Bachelor of Technology in Information and Communication Technology

Aug. 2019 – May 2023

Pandit Deendayal Energy University, Ahmedabad, India

3.84/4.00

Experience

Research Intern, Indian Space Research Organisation , Ahmedabad, India

January 2023 – May 2023

- Addressed and resolved a unique challenge by developing a solution to provide navigation using Low Earth Orbit (LEO) satellites originally designed for broadcasting, lacking the atomic clocks commonly found in dedicated navigation satellites.
- After extensive research, formulated a mathematical algorithm and successfully implemented it within the MATLAB environment.
- Conducted rigorous testing of the algorithm using data directly retrieved from LEO satellites, achieving a commendable position accuracy rate of 89.9%.

Software Development Intern, Marviz Tech Pvt Ltd , Ahmedabad, India

August 2022 – December 2022

- Developed a web application for the organization to serve consumers and manage digital billboards for the broadcasting of video advertisements.
- Utilized ReactJS for the frontend and Node.js for the backend development of the website.

Data Scientist, eAgent Houston, USA

Nov 2021 – March 2022

- Leveraged Numpy and Panda libraries in python to efficiently preprocess and update over 20 daily raw data files on the website server, ensuring data accuracy and accessibility.
- Employed data visualization tools, including Seaborn, to derive valuable insights and predictive patterns from the data, enabling the anticipation of future electricity rates, and actively participated in the development of a full-stack web application using MongoDB, ReactJs and Node.js technology for the company's innovative project.

Projects

An Effective EEG Signal-Based Sleep Staging System using Machine Learning Techniques

- Developed an automated sleep staging system published in IEEE Xplore journal, which addresses sleep disorders by monitoring EEG wave patterns during sleep, eliminating the need for physician supervision and providing accurate sleep stage classifications.
- EEG signals were extracted using python from polysomnography test data encompassing 153 recordings, which included 37 males and 41 females in the age group of 25-101 years at the time of recording.
- Leveraged supervised machine learning methodologies including K-Nearest Neighbors (KNN) and Random Forest, complemented by algorithm stacking. Achieved an outstanding accuracy of 93.3 percent and further improved model performance through the implementation of Artificial Neural Networks (ANN) and Convolutional Neural Networks (CNN). Employed libraries such as scikit-learn, NumPy, Pandas, Seaborn, and TensorFlow.

Computer Vision in Biomedics

- Spearheaded a comprehensive project focused on computer vision in biomedical imaging, specializing in chest X-ray datasets, including Chest X-ray 14, MIMIC, Chexpert, VinDrCXR, Node21, TBX 11, ChestXDet, and Pneumothorax.
- Implemented state-of-the-art deep learning architectures, such as PEAC, UperNet, Unet/Unet++, Swin, Dice/IoU for segmentation, Adam, DINO, Faster-RCNN, Swin, FROC for localization, and ARK, ConvNext, Swin, Internimage for classification, achieving consistently high accuracy exceeding 90%.
- Developed robust PyTorch dataloaders in python tailored for each dataset, ensuring efficient data integration into the deep learning pipeline, fostering seamless model training and evaluation.
- Employed rigorous evaluation methodologies, utilizing ROC curves, AUC analysis, and DICE coefficients to assess model performance and fine-tune algorithms for optimal biomedical image analysis outcomes.
- Demonstrated an agile approach in addressing challenges related to dataset heterogeneity, algorithmic complexities, and computational constraints. Stayed at the forefront of biomedical imaging advancements, incorporating the latest techniques into the project for continuous improvement.

Scalable Video Analysis Platform Using AWS Serverless Architecture

- Developed a scalable video analysis application using AWS Lambda, S3, and IAM, leveraging serverless computing with FFmpeg for video splitting and ResNet-34 for face recognition.
- Optimized application performance and security within AWS, utilizing CloudWatch for monitoring and custom auto-scaling techniques to enhance resource management and cost efficiency.

Technical Skills

Languages and tools: Java, C, C++, python, embedded C , object oriented programming, debugging, data structures, AutoCad

Web Development Technologies: HTML, CSS, JS, bootstrap, React-JS, MYSQL,CMS,d3

Databases: MySQL, Oracle SQL Plus, SparkSQL, MongoDB

Machine Learning: Numpy, Pandas, Scikit-learn, Seaborn, supervised learning, CNN, ANN, Opencv , NLP, Tensorflow, Keras , artificial intelligence, PyTorch, ResNet, Swin transformer