Anupam Anurag Tripathi

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EDUCATION

Northwestern University **Evanston, IL**
Master of Science in Artificial Intelligence | GPA: 3.93/4 **Expected: Mar 2021**
Relevant Coursework: Advanced Computer Vision, Computational Photography, Data Science, Geospatial Vision and Visualization, Deep Learning Foundations, Statistical Pattern Recognition, Statistical Language Modelling, Design and Analysis of Algorithms.

University of Mumbai **Mumbai, India**
Bachelor of Technology in Computer Engineering | GPA: 3.6/4 **Aug 2015 - Jun 2019**
Relevant Coursework: Artificial Intelligence, Neural Networks, Advanced Databases, Applied Math, Big Data, Image Processing.

WORK EXPERIENCE

Graduate Research Assistant (Data Science) - Kellogg School of Management **Feb 2020 – Present**
- Developing an econometric model using ML techniques to find the causal impact of eco-labels on demand steering.
- Analysing the delivery time slots using Probit and Mixed Logit regression to offer incentives for the customers.

Student Researcher - Home Depot **Oct 2020 - Dec 2020**
- Generated strategies to mitigate inventory shrink losses by analysing misclassification of visually similar products.
- Created multi-dimensional encodings by concatenating the output vector of Convolutional Autoencoder to product weight, dimensions and Glove embedding of product description.
- Developed a search algorithm to calculate encoding of products by generating multiple metrics derived using cosine similarity.
- Enhanced precision of demand/pricing models by **10%**, and presented insights of analytical results for **2500+** products.

Machine Learning Intern - Sin Emerging Technologies **Jun 2020 – Sep 2020**
- Determined correctness of workout postures of an AR/VR game using Pose Estimation.
- Identified important joints by implementing Key-Point Detection and treated those (x, y, z) coordinates as RGB pixels.
- Detected the workout form using Convolutional Neural Networks on generated image data and deployed the model using Onnx.

Artificial Intelligence Intern - Home Drone **Sep 2018 - Jan 2019**
- Designed drones to be smarter and fully automated for applications such as outdoor projectors and intra office transport.
- Developed path detection algorithms to help drones navigate in known indoor environments in the shortest way possible.

Machine learning Research Intern - University of Mumbai **Dec 2017 - Jan 2018**
- Built a pipeline that extracted live video from a webcam showing the person's Facial Expressions in real-time.
- Performed a comparative study using a Fully Connected Neural Network, a CNN trained from scratch, and a CNN trained using Transfer Learning with a winning accuracy of **95%**.

SKILLS

Tech Stack: Python, Java, MATLAB, C, C++, MySQL, Oracle11g, PostgreSQL, MongoDB
Tools and Frameworks: AWS, Azure, PyTorch, Tensorflow, Keras, Tableau, OpenCV, CUDA, Databricks

PUBLICATIONS

Vision: A Deep Learning Approach to provide walking assistance to the visually impaired: Nikhil Thakurdesai, Anupam Tripathi, Dheeraj Butani, Smita Sankhe. arXiv:1911.08739, November 2019.

PROJECTS

Novel View Synthesis (Facebook) **Apr 2020 - Present**
- Applied Multi-Plane Image representation (MPI) aiming to improve computational time for creating novel views.
- Reduced the view rendering time to **80%** by strategically placing planes using alpha density & vanishing points of the scene.
- Implemented a two-pass Deep Learning approach to generate and refine MPI for real time video view synthesis.

3D Anthropometric Measurement **Apr 2020 - Jun 2020**
- Acquired clothing measurements of clients by using self-supervision from 360° input images with an R2 score of **0.62**.
- Deformed a pre-defined body mesh by comparing its projection to input views by training a Siamese network on adversarial loss.
- Measured circumference of body parts using A* algorithm on the trained mesh & provided final estimates with 1D embeddings.

Image Inpainting **Jan 2020 - Mar 2020**
- Restored missing regions of an image by improving the state-of-the-art PixelRNN model with an SSIM score of **0.83**.
- Enhanced the network efficiency and shape independence by passing k pixels nearest to the missing parts of the image.
- Preserved intensities between restored and original regions of the image by implementing Poisson blending.
- Secured 1st position at Hackathon organized by AWS held at Northwestern University, Evanston.

Audio Assistance for Blind **Jul 2018 - May 2019**
- Developed an application which provides real time walking assistance to the visually impaired in the form of audio instructions.
- Employed YOLOv3 for Object Detection with 85% accuracy and used monocular depth estimation to cut camera costs by **50%**.
- Secured 1st position at Prakalpa, an annual state-level technical symposium held at the University of Mumbai.

Other Projects: Text to SQL, Data Analytics on Chicago Police Dataset, Facial Emotion Recognition, Face Recognition using One Shot Learning, COVID-19 Spread Prediction using Graph Neural Networks.