Anupam Anurag Tripathi

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EDUCATION

Northwestern University **Evanston, IL**
Master of Science in Artificial Intelligence | GPA: 3.93/4 **Sept 2019 - 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

Data Scientist, Kellogg School of Management, Evanston IL **Feb 2020 - Present**
- Developing an econometric model using Machine Learning techniques to find 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, Evanston IL **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, Milwaukee WI **Jun 2020 - Sept 2020**
- Determined correctness of workout postures for 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 size independent CNN on generated image data and deployed the model using Onnx.

Artificial Intelligence Intern, Home Drone, Mumbai, India **Sept 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, Mumbai India **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, MySQL, PostgreSQL, MongoDB
Tools and Frameworks: AWS, Azure, PyTorch, Tensorflow, Keras, PyTorch3D, OpenCV, Kornia, CUDA, Tableau, Databricks

PUBLICATIONS

- Vision: A Deep Learning Approach to provide walking assistance to the visually impaired: N Thakurdesai, A Tripathi, D Butani and S Sankhe. arXiv:1911.08739, November 2019.
- Face Recognition using One-shot Learning: N Thakurdesai, N Raut and A Tripathi. IJCA 182(23):35-39, October 2018.

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 Siamese network on adversarial loss.
- Measured circumference of body parts using A* algorithm on the trained mesh & provided final estimates with 1D embeddings.

Geospatial Imagery Misalignment Detection **Jan 2020 - Apr 2020**
- Detected misalignments in point clouds by comparing their projections to aerial images and drive through videos.
- Used image processing techniques like smoothening, dilation, mean of frames, etc to generate a mask for smear on camera lens.
- Accounted for camera tilt in the extrinsics using GPS coordinates from probe data to estimate the slope of roads.

Audio Assistance for Blind **Jul 2018 - May 2019**
- Developed an application that provides real time walking assistance to the visually impaired in the form of audio instructions.
- Employed YOLOv3 for Object Detection with **88%** accuracy and used monocular depth estimation to cut camera costs by **50%**.
- Secured 1st position at Hackathon organized by AWS held at Northwestern University, Evanston.

Other Projects: Text to SQL, Image Inpainting, Facial Emotion Recognition, Face Recognition using One Shot Learning, COVID-19 Spread Prediction using Graph Neural Networks, Analysis of Chicago Police Dataset.