ARUN PATRO

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EDUCATION

Courant Institute, New York University 2022 - Now
MS in Computer Science

Indian Institute of Technology, Kharagpur 2013 - 2018
B.Tech. + M.Tech. in Electrical Engineering (Signal Processing)

WORK EXPERIENCE

Meesho Bangalore/Hyderabad
Data Scientist - 2 Nov 2021 - Aug 2022

- **Visual Taxonomy Tagging**: Built the founding Image Engine which powered Attribute Extraction, Similarity Learning, Brand Logo identification, Watermark and Fraud identification across multiple product categories. Deployed and Maintained the CV-ML System end-to-end with best practices in MLOps like monitoring, logging, sanity checks and other pipelines.
- **Tech Details**:
  1. Developed and deployed 250+ image models for attributes in 35+ product categories
  2. Color quantization models using Vision Transformers and K-Means Clustering
  3. Baseline brute force continual learning framework for retraining models.
  4. Model tracking and experimentation using neptune.ai
  5. Deployment of batch-mode inference using Pyspark + EMR + Airflow
  6. Python project development using nbdev.fast.ai
- **Leadership Details**:
  1. Hosted a weekly Research & Talks forum
  2. Mentored juniors and interns
  3. Wrote blog posts, work demos and presented in org-wide forums

CVIT, International Institute of Information Technology - Hyderabad Hyderabad
Research Fellow — Vision for Mobility Sep 2020 - Sep 2021

- As part of the **Vision for Mobility** lab, my focus was on improving object detectors and understand the role of contextual objects to aid scene understanding. This relied on robust object detection under partial occlusion of traffic objects. Experimented with Compositional Models and Part Detectors. Worked on 2000km of Indian Driving Dataset, BDD, IceVision, MTSD, etc

Myntra Designs Bangalore
Data Scientist — Data Science for Supply Chain Inbound Mar 2019 - Aug 2020

- **Style Grading**: Quantified the measure of new style's sales potential using a probabilistic model, trained on similar style's sales data. Grade score is the probabilitiy that the style's $CVR > CVR_{threshold}$. Led to a 10% improvement in Revenue Per Impression and catalouge health.
- **De-Duplication**: Scaled triplet embedding networks to identify duplicate styles in the catalouge. This improved the platform and catalouge hygiene.
- **Regional Utilisation**: Modelled the optimal allocation of products to Myntra's principal warehouses considering the dynamic capacity of warehouses. Estimated the regional demand of products using product attributes as features and MLP model. Optimized using Integer Programming.

Myntra Designs Bangalore
Data Scientist — Data Science for Image Sciences Jul 2018 - Mar 2019

- **AttnGAN**: Unsupervised text-to-image generation using Attentional Generative Networks. Used it to generate novel designs conditioned on natural language query. We showed that we can edit and mix-and-match specific attributes of the generated designs.
- **GAN Experiments**: Proposed different gradient measure loss functions for estimating noise vectors in GANs. Improved symmetry of generated shirts by imposing symmetry conditions on the GANs. Attempted to model generation of stripes in the striped images.

PUBLICATIONS

Intelligent Warehouse Allocator for Optimal Regional Utilization [link]
AI for Fashion Supply Chain Workshop, KDD 2020
Girish Sathyanarayana, Arun Patro

Let AI Clothe You: Diversified Fashion Generation [link]
Computer Vision - Workshops, ACCV 2018
Rajdeep H. Banerjee, Anoop Rajagopal, Nilpa Jha, Arun Patro, Aruna Rajan

Evaluation of Loss Functions for Estimation of Latent Vectors from GAN [link]
International Workshop on Machine Learning for Signal Processing (MLSP)
Arun Patro, Vishnu Makkapati, Jayanta Mukhopadhyay

Enhancing Symmetry in GAN Generated Fashion Images [link]
BCS SGAI International Conference on AI-2017
Vishnu Makkapati, Arun Patro

PROJECTS

3D Digitization of Humans for Size and Fit Estimation August 2020
Won BRONZE at annual Myntra Hackathon. Using two images of a person in tight fit clothes, we could estimate the size and fit of a person upto 1 inch accuracy. We used Open Pose and PIFuHD.

Automated Fashion Generation using Generative Adversarial Networks 2017 - 2018
with *Vishnu Makkapati* and *Prof. Jayanta Mukhopadhyay*
Modelling DCGANs to improve quality of fashion images with periodic signals (stripes, checks, etc). Experimented with GAN architectures and synthetic datasets for texture synthesis and analysis. Worked on inverting GANs to encode images in latent space, and create mix-and-match designs.

Blur Kernel Estimation using Deep Convolutional Networks 2016 - 2017
with *Dr. Rajiv Ranjan Sahay*
Estimation of guassian blur kernels to quantify the degree of defocus blur of non-uniformly blurred images. Trained CNNs to learn the blur parameter (sigma) of a gaussian blur from patches obtained from invariantly blurred textured images (Brodatz Dataset).

SKILLS

Languages	English, Hindi, Odia, Python, JS, C
Data Science	Pytorch, Tensorflow Probability, Python for Data Science Stack
Courses	Computer Graphics, Computer Vision, Machine Learning, Deep Learning, Graphical Models, Signal Processing, Optimization, Image Processing, Copyright Law, Indian Constitution Law