

## EDUCATION

### NYU Courant Institute of Mathematical Sciences

*Masters in Computer Science*

Sep 2022 – Present

- **Key Courses:** Algorithms, Programming Languages, Cryptocurrencies and Decentralized Ledgers

### Indian Institute of Technology, Kharagpur

*B.Tech. + M.Tech. in Electrical Engineering (Signal Processing)*

Jul 2013 – Apr 2018

- **Key Courses:** Computer Vision, Machine Learning, Deep Learning, Graphical Models, Signal Processing, Optimization, Image Processing, Computer Graphics, Copyright Law

## INDUSTRY EXPERIENCE

### Meesho

Nov 2021 - Aug 2022

*Data Scientist - II*

Bangalore, India

- **Taxonomy Recognition:** Built the founding Image Engine powering Attribute Extraction, Similarity Learning, Brand Logo identification, Watermark and Fraud identification across multiple product categories. 80% pareto = 35 categories x 10m products per month (avg)
- Deployed and Maintained the CV-ML System end-to-end with best practices in MLOps like monitoring, logging, sanity checks and other pipelines. **Project Impact:** 30% Reduction in cost = \$20M per year
- **Tech Stack:** PyTorch, PyTorch Lightning, Neptune.ai, PySpark, AWS-EMR, DataBricks

### Myntra Designs

Mar 2019 - Aug 2020

*Data Scientist — Data Science for Supply Chain Inbound*

Bangalore

- **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. **Project Impact:** 27% Improvement in RU; 20% Improvement in 2DD [arxiv]
- **Tech Stack:** PyTorch, Python-MIP, Azure, PySpark

### Myntra Designs

Jul 2018 - Mar 2019

*Data Scientist — Data Science for Image Sciences*

Bangalore, India

- **GAN Experiments:** Unsupervised text-to-image generation using Attentional Generative Networks. We showed that we can edit and mix-and-match specific attributes of the generated designs. 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. Implemented AttnGAN at scale.
- **Tech Stack:** PyTorch, Tensorflow, TF-Probability, Flask, HTML/CSS/JS

## RESEARCH EXPERIENCE AND PUBLICATIONS

### Detection of Partially Occluded and Missing Objects from Indian Driving Scences

Sep 2020 - Sep 2021

*Dr. CV Jawahar, Professor, Vision for Mobility Lab, CVIT*

IIIT - Hyderabad

- 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

### Intelligent Warehouse Allocator for Optimal Regional Utilization [arxiv]

*Girish Sathyanarayana, Arun Patro*

AI for Fashion Supply Chain Workshop, KDD 2020

### Let AI Clothe You: Diversified Fashion Generation [link]

*Rajdeep H. Banerjee, Anoop Rajagopal, Nilpa Jha, Arun Patro, Aruna Rajan*

Computer Vision - Workshops, ACCV 2018

### Evaluation of Loss Functions for Estimation of Latent Vectors from GAN [link]

*Arun Patro, Vishnu Makkapati, Jayanta Mukhopadhyay*

IEEE Workshop MLSP - 2018

### Enhancing Symmetry in GAN Generated Fashion Images [link]

*Vishnu Makkapati, Arun Patro*

BCS SGAI International Conference on AI-2017

## SELECTED 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 GANs

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.

## ABOUT ME

Hi there! I write stuff at [\[arunpatro.com\]](http://arunpatro.com)