

ARUN PATRO

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EDUCATION

Indian Institute of Technology, Kharagpur 2013 - 2018
Master of Technology in Signal Processing
Bachelor of Technology in Electrical Engineering
Dept. of Electrical Engineering GPA: 8.1

CAREER OBJECTIVE

To work in the fields of Artificial Intelligence and Computer Vision. I also enjoy working on Operations Research related problems.

SKILLS

Languages	English, Hindi, Odia, Python, JS
Data Science	Pytorch, TF, Pandas, SKLearn, Tensorflow Probability
Courses	Machine Learning, Deep Learning, Signal Processing, Optimization, Image Processing, Copyright Law, Constitution Law

PUBLICATIONS

Intelligent Warehouse Allocator for Optimal Regional Utilization

AI for Fashion Supply Chain - Workshops, KDD 2020

Girish Sathyanarayana, Arun Patro

<https://arxiv.org/abs/2007.05081>

Let AI Clothe You: Diversified Fashion Generation

Computer Vision - Workshops, ACCV 2018

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

https://doi.org/10.1007/978-3-030-21074-8_7

Evaluation of Loss Functions for Estimation of Latent Vectors from GAN

International Workshop on Machine Learning for Signal Processing (MLSP)

Arun Patro, Vishnu Makkapati, Jayanta Mukhopadhyay

<https://ieeexplore.ieee.org/abstract/document/8517097>

Enhancing Symmetry in GAN Generated Fashion Images

BCS SGAI International Conference on AI-2017

Vishnu Makkapati, Arun Patro

https://doi.org/10.1007/978-3-319-71078-5_34

WORK EXPERIENCE

Myntra Designs, Bangalore

July 2018 -

Data Scientist

Data Science for Supply Chain Inbound

Mar 2019 -

• Style Grading: To quantify the measure of new incoming style's sales potential, we use a probabilistic model, trained on similar style's sales data, to infer the style grade i.e. probability that the style's $CTR > CTR_{threshold}$. This led to a 10% improvement in Revenue Per Impression and catalogue health.

- De-Duplication: Scaled De-Duplication models based on triplet embedding networks to identify duplicate styles in the catalogue. This improved the platform and catalogue hygiene.
- Regional Utilisation: Intelligently allocate and inward products to Myntra's principal warehouses. Modelling required estimating the demand split of the product and the optimal allocation respecting the dynamic capacity constraints. Demand estimation was done using a 3-layer MLP and attributes of the products as features. Optimal Allocation was done using Integer Programming and where the loss was the logistics cost of re-allocation.

Data Science for Image Sciences

July 2018 - Mar 2019

- AttnGAN: AttnGAN is for text-to-image unsupervised generation using attentional generative networks. We use it to model our fashion catalogue distribution. We generated mixed new designs using interpolation of these images and were able to generate novel designs conditioned on natural language query.
- 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.

PROJECTS

Automated Fashion Generation using Generative Adversarial Networks

2017 - 2018

with *Vishnu Makkapati* and *Prof. Jayanta Mukhopadhyay*

Here we model DCGANs to improve quality of images for periodic data (stripes, checks, etc) of fashion images. We have experimented with different GAN architectures and modified datasets for texture synthesis and analysis. We worked on inverting the GANs to understand data distribution in latent space, and create mix-and-match designs.

Blur Kernel Estimation using Deep Convolutional Networks

2016 - 2017

with *Dr. Rajiv Ranjan Sahay*

Here we estimated the gaussian blur kernels to quantify the degree of defocus blur of non-uniformly blurred images. Estimation was done patchwise. Trained a Convolutional Neural Networks to learn the blur parameter (sigma) of a gaussian blur from patches obtained from invariantly blurred textured images (Brodatz Dataset).

Autonomous Ground Vehicle Research Group

2014 - 2015

with *Prof. Devasish Chakravarty*

Detecting obstacles and lanes in grassy and city environments as part of the Computer Vision Team. AGV competes in Intelligent Ground Vehicle Competition and Mahindra Rise Prize.