ARUN PATRO

arun.kumar.patro@gmail.com

arunpatro.com

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 Workshop, 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: 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.

· <u>De-Duplication</u>: Scaled De-Duplication models based on triplet embedding networks to identify duplicate styles in the catalouge. This improved the platform and catalouge hygiene.
· <u>Regional Utilisation</u>: Modelled the optimal allocation of products to Myntra's principal warehouses considering the dynamic capacity of warehouses. Estimated the regional demand of the product using a 3-layer MLP and attributes of the products as features. Optimal Allocation computed using Integer Programming where the loss was the logistics cost of re-allocation.

Data Science for Image Sciences   July 2018 - Mar 2019

· <u>AttnGAN</u>: 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.
· <u>GAN Experiments</u>: 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 Adversartal 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 different GAN architectures and modified 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).

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.

EXTRA-CIRRUCULAR

Governor of Encore theatre troupe, IIT Kharagpur (7 theater productions, 4 street plays)

Team Leader of Outgoing Exchange, AIESEC IIT Kharapgur

Cadet at National Cadet Corps (NCC) - Indian Air Force