ARUPARNA MAITY

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EDUCATION

M.Sc. Big Data Analytics — *July 2018 - July 2020*
Ramakrishna Mission Vivekananda Educational and Research Institute, Belurmath — *Current CGPA: 8.16/10.00*

B.Sc. Economics — *July 2015 - May 2018*
Ramakrishna Mission Vidyamandira, Belurmath — *CGPA: 8.10/10.00*

Higher Secondary, Stream: Science — *March 2013 - May 2015*
Delhi Public School, NTPC, Farakka — *Percentage: 86%*

Secondary — *2013*
Delhi Public School, NTPC, Farakka — *CGPA: 10.00/10.00*

WORK EXPERIENCE

Data Science Associate — *August 2020 - Present*
Advanced Data Science (ADS) Group,
ZS Associates, Bangalore

Data Science Associate intern — *March 2020 - July 2020*
Advanced Data Science (ADS) Group,
ZS Associates, Bangalore

Summer Research Intern — *June 2019 - July 2019*
Sixth Summer School on Computer Vision, Graphics and Image Processing,
Indian Statistical Institute, Kolkata

STRENGTHS AND INTERESTS

Machine Learning & Deep Learning	Autoencoders, GAN, ResNets, Inception & Siamese Networks, YOLO *Learning* : Transformers
Mathematics & Statistics	Probability distributions, Econometrics, Hypothesis testing, ANOVA SVD, Fourier Series and Transformations, Compressed Sensing
Computer Vision & Computer Graphics	Splines, Thin Plate Splines, Shape From Shading, Image Inpainting *Learning* : Texture Mapping and Replication, 3D Reconstruction

PROJECTS AND EXPERIENCE

ZS projects
ZS Associates — *March 2020 - present*

- Worked on the ZS iData research project and solved PoCs, built integrated generalized pipeline for detecting anomalies in data from various pharma domains like digital marketing, Specialty Pharmacy.
- Developed an *intelligent Algorithm Recommendation Engine* to automatically select algorithms and suggest probable probability thresholds for anomalies.
- Worked on developing *smart hand-crafted features*, which impact anomaly detection immensely.
- Worked on feature explainability, like what features impact model prediction, and the feature values which pushes prediction of data points to be anomalous or non-anomalous.

- Also designed an advanced ML pipeline incorporating repetitive *Adversarial Validation* for improving model performance through hyper-parameter tuning.
- Working on a novel Non-Alcoholic Fatty Liver Disease (NAFDL) project- bringing *interpretability* to ML models for detecting the disease at an early stage before the requirement of liver biopsy.
- Bringing SOTA model performance using complex modifications of *Genetic Algorithms*.

LGVTON: A Landmark Guided Approach to Virtual Try-On
Summer Research Intern at Indian Statistical Institute, Kolkata *May 2019 - July 2019*

- Developed an innovative mechanism of **Garment Transfer** from one person to another with a different pose, using *Spline Transformations. Link to paper*.
- Implementations: Pose estimation using Deep Learning, Semantic Segmentation, Non-affine Transformations, GAN; (tested) Image Inpainting and Shape from shading. *Sample results*.

Artificial Intelligence Projects
RKMVERI, Belurmath *August 2019 - December 2019*

- **Project 1: Automating** the game of Pacman by implementing Breadth First Search, Depth First Search, Uniform Cost Search and A-Star Search algorithms.
- **Project 2 (Reinforcement Learning):** In this project, we implemented **Value Iteration** and **Q-Learning**. We tested our algorithms first on an agent in a Gridworld (containing target spots, danger spots as well as reward spots). Then we applied them to a **simulated robot crawler** and a Pacman.

Automation of the Game of 8 Tiles
Self-paced project on Artificial Intelligence *January 2020*

- Solving the Game of **"8 Tiles"** using **Offline Learning** and **Online Learning**, separately.
- *Ongoing*: Solving the game with a grid size larger than 3×3 using **Monte Carlo Tree Search**.

Deep Learning Projects
RKMVERI, Belurmath and ISI, Kolkata *August 2019 - November 2019*

- **Project 1:** Using **Spatial Transformer Network** for handwritten digit recognition. Achieved an accuracy of 99.14%.
- **Project 2:** Building a **Neural Language model** (using RNN, LSTM or GRU). Using this NL model, various stories were combined to generate new stories.
- **Project 3: Image Captioning**: A state-of-the-art technique called the **"Attention" mechanism** was used to generate captions for any arbitrary image.

An Exploratory and Predictive Analysis using Sparklyr and R
RKMVERI, Belurmath *May 2019*

- This Big Data Project was done based on Washington's popular Bike Sharing program.
- Analysed number of biked shared, based on various weather conditions and seasons, and their evolution over the years, considering the average rise in temperature of the city due to Global Warming.

Machine Learning
RKMVERI, Belurmath *May 2019*

- **Opinion mining** and **Sentiment Analysis** of people's opinion on "What qualities are necessary to become the Prime Minister of India?" It was an **unsupervised approach** and the task was accomplished without using standard Machine Learning library.

Project intern at Global Initiative of Academic Networks (GIAN)
IIT Indore *January 2018*

- Attended talks on "Economics of Science, Technology & Innovation: Empirical Approaches & RCTs".

· Presented on "Using RCTs for analysing the effectiveness of newly developed seeds in India and design patents". Received certificate of excellence from Dr. Inna Ganguli, University of Massachusetts.

TECHNICAL STRENGTHS

Regularly Use	Python, R, Tensorflow-GPU, Keras, Git, Bash, Windows Subsystem for Linux, Distributed Computing using PySpark, SQL
Also Familiar with	C, C++, MATLAB, STATA, LaTeX

RELEVANT COURSES TAKEN

Machine Learning & Deep Learning
AI & RL
Image Processing
Computer Vision & Graphics
Optimization Techniques
Advanced Statistics & Econometrics
Multivariate Calculus
DBMS & Data Mining

ACADEMIC ACHIEVEMENTS

- Received the award of the *"Project of Special Mention"* for the summer project at ISI, Kolkata.
- Champion at National Level CBSE Science Exhibition held at St. Xavier's Senior Secondary School, Delhi- 54. Received the *Certificate of Merit* for the then Education Minister of India.
- Champion at Regional Level CBSE Science Exhibition, Bhubaneshwar. *Certificate of Merit*.
- Received *Certificate of Excellence* from Dr. Inna Ganguli, University of Massachusetts for my presentation on "Using RCTs for analysing the effectiveness of newly developed seeds in India and design patents" at IIT, Indore.

EXTRA-CURRICULAR

- Champion at State-level, Runners-up at District level and block level **Badminton** championship.
- Represented West Bengal at National level in All India Badminton Championship organised by PYKKA. *Link to Certificates*.
- Trained and disciplined at 31 Bengal BN **NCC**, Ramakrishna Mission Vidyamandira, Belurmath.
- **Management and Leadership** experience: Volunteered public events at Belurmath, maintaining a crowd of 10,000 people.
- Secured Gold at University level Badminton championship; and Third place in **Shot Put**.
- Received prize from Sri Srikanto Acharya for securing first prize in **Pakhavaj** (or **Mridangam**).
- **Art and Painting**: Oil Painting, Microtip Pen & Pencil Sketch *Link to my Art works*.