Subhrajyoti **Dasgupta**

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Education

Université de Montréal / Mila - Quebec AI Institute *Montréal, Canada*

MSc Computer Science - specialization in ML *September 2022 - Present*

- Part of the Mila MSc in Machine Learning program. Program supervisor - Prof. Yoshua Bengio.

Amity University *Kolkata, India*

B.Tech. in Computer Science and Engineering *August 2016 - August 2020*

- CGPA 8.66/10.0 (*First Class with Distinction*) [Dept. Rank - 4/98]
- Final Year CGPA 9.38/10.0; CS Subjects CGPA 9.06/10.0

Research

- **Subhrajyoti Dasgupta**, Arindam Das, Sudip Das, Andrei Bursuc, Ujjwal Bhattacharya, Senthil Yogamani: UnShadowNet: Illumination Critic Guided Contrastive Learning For Shadow Removal. [submitted] [paper]
- Sanjoy Chowdhury, Aditya Prakash Patra, **Subhrajyoti Dasgupta**, Ujjwal Bhattacharya: AudViSum: Self-Supervised Deep Reinforcement Learning for diverse Audio-Visual Summary generation. *British Machine Vision Conference(BMVC) 2021.* [paper]
- Sanjoy Chowdhury, **Subhrajyoti Dasgupta**, Sudip Das, Ujjwal Bhattacharya: Listen to the Pixels. *International Conference on Image Processing (ICIP) 2021, Anchorage, Alaska, USA.* [paper]
- **Subhrajyoti Dasgupta**, Sudip Das, Ujjwal Bhattacharya: CardioGAN: An Attention-based Generative Adversarial Network for Generation of Electrocardiograms. *International Conference on Pattern Recognition (ICPR) 2020, Milan, Italy.* [paper]

Experience

TCS - 'Analytics & Insights' Unit *Kolkata, India*

Data Engineer *September 2020 - August 2022*

- Selected as a *Digital candidate* for top rank in global programming contest 'Codevita' (among ∼ 60k participants).
- Responsible for large-scale(multi terabytes) data ingestion from different sources and maintenance of existing ingestion pipelines.
- SME on 'Logistic Service Provider(LSP)' ingestion pipeline.
- Innovated and implemented CI/CD feature enhancements reducing pipeline completion time by 80%.
- Building scripts for validating the data consistency of source and target data.
- Developed Infrastructure tools to improve System Data Quality.
- Trained and mentored new associates about the different running ingestion architectures, technical know-hows, etc.
- Tools used : Python 3, PySpark, Databricks, PostgreSQL, Pandas, Numpy, Gitlab, AWS, Airflow.

Indian Statistical Institute *Kolkata, India*

Visiting Researcher(Earlier - Research Intern) *January 2020 - August 2022*

- Advisor - Prof. Ujjwal Bhattacharya
- ISI, Kolkata is an eminent institution of national importance with research focusing on different branches of Statistics.
- Currently exploring novel approaches for efficient audio-visual scene understanding, audio-visual summarization and illumination estimation & correction for in-the-wild scenes.
- Previously, I have worked on research projects involving audio-visual co-segmentation and privacy-preserving synthetic ECG signal generation.
- I am also trying to build insights to applications in the medical imaging domain.
- Tools being used : Tensorflow 2.0, Keras, Python 3, Pandas, Numpy, Matplotlib, Linux OS.

Bhabha Atomic Research Center *Mumbai, India*

Deep Learning Project Trainee *June 2019 - July 2019*

- BARC is the premier nuclear research organisation in India under Dept. of Atomic Energy (Government of India).
- I worked on a CTC-based Handwritten Text Recognition model for documents with Devanagari script characters with the help of Deep Learning.
- Studied and used few-shot learning and transfer learning techniques to address very limited training data.
- It also involved cleaning and extraction of image data using conventional Image Processing techniques along with Data Augmentation.
- The project also helped in studying and reviewing several state-of-the-art Deep Learning architectures from scratch like EAST, FOTS, etc.
- Tools used : Keras, OpenCV, Python3, Pandas, Numpy, Matplotlib, Linux OS.

Awards & Achievements

- Recipient of UdeM Exemption Scholarship valued at CAD ~10,000/year
- Merit-based scholarship from Amity University for academic excellence
- TCS Codevita Season 8 - Top 2 %ile (among ~ 60k participants)
- 1st Runner Up in the entire region at 'Exabyte'-2018 Programming Contest at St. Xaviers' College, Kolkata, India (among 500+ participants)
- Amazon Web Services and Udacity Machine Learning Scholarship
- Facebook AI and Udacity Secure and Private AI Challenge Scholarship
- Winner in Debating at Don Bosco School, Bandel, India
- Champion in Regional Abacus Competition at Kolkata (among 1000+ participants)
- Top Performer of University in November '17 & March '18 at Codechef Competitive Programming Challenge

Volunteer Experience

- Developer Students Community (by Google Developers) - Hosted technical talks, seminars and mentored students with AI research.
- United Nations Volunteers, India - Helped raise awareness about Plastic Pollution. Conducted campaigns and drives in the entire city.
- FIFA U17 World Cup, India - Helped organize first ever FIFA tournament in India as a Media Operations Volunteer.
- Helped more than 1000 families from the start of the pandemic with ration and women hygiene kit. Project still ongoing.

Projects

Study and implementation of widely accepted works in Deep Learning *Ongoing*

INDEPENDENT STUDY

- Weight Uncertainty in Neural Networks
- Photo-Realistic Single Image Super-Resolution Using a Generative Adversarial Network

Image Super-Resolution *2019*

ACADEMIC PROJECT

- Implemented an adversarial resolution-enhancement solution for pixelated images.
- Implemented several types of CNNs using methods like dense connections, pyramid pooling, progressive upsampling and iterative upsampling to reconstruct the image.
- Studied and evaluated the performance by using different loss functions like content loss, pixel loss, texture loss and adversarial loss. Performance evaluation was done using metrics like PSNR, SSIM.

Studying ways to solve challenges faced by the LHC (CERN) with Machine Learning *2018*

ACADEMIC PROJECT

- A humongous amount of data is produced by the LHC per day. This data needs to be processed and used efficiently for further research.
- This study was on how Machine Learning can be implemented for particle identification, particle track reconstruction, clustering of particles based on similarity, and identifying rare decays.
- A study on the proposed SHiP experiment, with the scope of Machine Learning in it, was also done.

Skills & Courses

Languages/Frameworks/Tools	Java, Python, SQL, Tensorflow, Keras, OpenCV, Scikit-learn, Pandas, Numpy, PySpark, Matplotlib Git, Jupyter, Databricks
Relevant Courses	Deep Learning, Machine Learning, Probability and Statistics, Discrete Mathematics Applied Mathematics(Linear Algebra and Calculus), Algorithms and Data Structures

MOOCs

- Deep Learning Specialization, deeplearning.ai - Coursera
- Machine Learning, Stanford University - Coursera
- Introduction to Data Science using Python, University of Michigan - Coursera
- Programming, Data Structures and Algorithms in Python, Indian Institute of Technology, Madras - NPTEL

Languages

English, French(beginner), Hindi, Bengali.