Amartya **Sanyal**

(+44) 7448438276 | amartya18x@gmail.com | https://www.amartya18x.github.io | amartya18x | @AmartyaSanyal

Education

D.Phil in Computer Science (Advisor : Dr. Varun Kanade and Dr. Phil Torr) *2017 - 2021*

University of Oxford, St. Hugh's College

B.Tech. in Computer Science and Engineering (Minor in Linguistics Theory) *CPI - 9.4/10.0*

Indian Institute of Technology, Kanpur *2013 - 2017*

Research Experience

Laboratory for Computational and Statistical Learning, Prof. Lorenzo Rosasco *Genoa, Italy*

Visiting Researcher, Implicit Regularization of Gradient Descent *June 2019 - July 2019**

- Understanding the implicit regularization of Gradient Descent in various regimes.

Twitter, Cortex *New York, NY, USA*

Research Intern, Adversarial Generation of Discrete Sequences *May2017 - August 2017*

- Worked on developing a novel model for discrete sequence generation using adversarial techniques
- Contributed to the C and CUDA code base of torch7 and cutorch

Montreal Institute of Learning Algorithms, Prof. Yoshua Bengio *Montreal, QC, Canada*

Research Intern , Language Modelling with Adaptive Segmentation *May, 2016 - July, 2016*

- Used a DAG like structure with a recurrent unit at each node, where every path modelled a valid segmentation.
- Formulated various loss functions and experiment with them. Enable multi-gpu cluster support.

Amazon.com - Guided by Dr. Atool Saroop and Dr. Rajeev Rastogi *Bengaluru, India*

Machine Learning Intern, Competitive pricing with the Machine Learning Seller Service Team *May, 2015 - July, 2015*

- Built machine learning models to estimate fair prices of products sold on Amazon.
- Worked with hive , hadoop and AWS EML to realize the experiments on huge datasets.

Indian Statistical Institute, Kolkata - Prof. Swapan Parui and Prof. Ujjwal Bhattacharya *Kolkata, India*

A hybrid Convolutional Neural Network - Support Vector Machine for face recognition of varying resolution and sizes *Nov, 2014 - Dec, 2014*

- Studied the working of a very deep Convolutional Neural Network on face recognition problem
- Implemented a novel method for recognizing images with small sizes

Publications

Stable Rank Normalization for Improved Generalization in Neural Networks
Amartya Sanyal, Philip H.S. Torr, Puneet K. Dokania
Workshop on Understanding and Improving Generalization in Deep Learning, ICML, 2019

The Intriguing Effects of Focal Loss on the Calibration of Deep Neural Networks
Jishnu Mukhoti, Amartya Sanyal, Viveka Kulharia, Stuart Golodetz, Philip H. S. Torr, Puneet K. Dokania
In Submission, 2019

TAPAS: Tricks to Accelerate (encrypted) Prediction As a Service
Amartya Sanyal, Matt Kusner, Adria Gascon, Varun Kanade
International Conference on Machine Learning (ICML), 2018

Learning Low Rank Representations
Amartya Sanyal, Varun Kanade, Philip H.S. Torr
Workshop on Theory and Application of Deep Generative Models, ICML, 2018

Optimizing non-decomposable measures with deep networks
Amartya Sanyal, Pawan Kumar, Purushottam Kar, Sanjay Chawla, Fabrizio Sebastiani
Springer,Machine Learning (2018). 2018

Multiscale sequence modeling with a learned dictionary
Bart Merriënboer, Amartya Sanyal, Hugo Larochelle, Yoshua Bengio
Workshop on Machine Learning in Speech and Language Processing, ICML, 2017

Agent based simulation of the evolution of society as an alternate maximzation problem
A. Sanyal, S. Garg, A. Unmesh, H. Karnick
2017 International Conference on Behavioral, Economic, Socio-cultural Computing (BESC), 2017

A Hybrid Deep Architecture for Face Recognition in Real-Life Scenario
Amartya Sanyal, Ujjwal Bhattacharya, Swapan K. Parui
Lecture Notes in Computer Science (Vol. 10481), 2016

Teaching and Reviewing Responsibilities

2019	**Reviewer for NeurIPS 2019**, Vancouver	
2019	**Tutor in Theory of Optimization (60 students)**, Department of Engineering Science	*University of Oxford*
2019	**Tutor in Advanced Machine Learning for Sarah-Lawrence Programme**, Wadham College	*University of Oxford*
2018	**Reviwer for Critiquing and Correcting Trends in Machine Learning**, NeurIPS 2019	
2018	**Tutor in Machine Learning (22 students)**, Department of Computer Science	*University of Oxford*
2018	**Tutor in Machine Learning for Sarah-Lawrence Programme**, Wadham College	*University of Oxford*
2017	**Teaching Assistant in Computational Complexity**, Department Computer Science	*University of Oxford*
2014	**Academic Mentor**, Linear Algebra, Real Analysis and ODEs	*IIT Kanpur*

Awards & Visits

'19	**NeurIPS Top Reviewer Award**, One of the Top 400 reviewers
'18	**ICML Travel Award**, International Machine Learning Society
'18	**Attended Machine Learning Summer School**, Buenos Aires, Argentina
'17-'20	**Turing Doctoral Studentship Award**, The Alan Turing Institute, London, UK
'14 & '16	**Academic Excellence Award**, IIT Kanpur
'13	**KVPY(Kishore Vaigyanik Pratyashona Yojana)** , awarded to 280 students by the Gov. of India

Program Committees

2018	**Wining and Dining Officer**, St. Hugh's College MCR	*University of Oxford*
2015	**Editor**, Vox Populi, Campus Newsletter of IIT Kanpur	*IIT Kanpur*
2016	**Coordinator**, SIGML - Special Interest Group in Machine Learning	*IIT Kanpur*
2011	**President**, Social Welfare Group, St. Xaviers School, Raiganj	
2015	**Editorial Executive**, Science And Technology Council - Core Team	*IIT Kanpur*

Research Projects

Non-Convex methods in Homography Estimation and Foreground Background separation

IIT Kanpur

Dept. of CSE, Prof. Purushottam Kar and Prof. Prateek Jain *Aug, 2016 - Dec, 2016*

- Developed a novel non-convex method for Homography Estimation, which is upto 8x faster than RANSAC
- Extending Non-Convex Robust PCA to work with moving camera
- Experimenting with Homography estimation with multiple foreground objects.

Extreme MultiClass Classification

IIT Kanpur

Dept. of CSE, Prof. Purushottam Kar and Prof. Prateek Jain *Jan, 2016 - April, 2016*

- Studied state of the art algorithms in the field of Extreme MultiClassification
- Implemented a partly novel algorithm for this problem
- Conducted extensive benchamarking of existing algorithms and our algorithms on several large scale datasets

Iterative Hard Thresholding for Sparse Recovery

IIT Kanpur

Dept. of CSE, Prof. Purushottam Kar and Prof. Prateek Jain *July, 2015 - Dec, 2015*

- In-depth understanding of regression optimization methods, specially in the case of sparse recovery and compressive sensing.
- Working on large-scale benchmarking of available methods under various constraints.

Team member, ABU ROBOCON Team IITK

IIT Kanpur

Centre for Mechatronics, Prof. Bhaskar Dasgupta *2013*

- Developed(Programmed) an autonomous and a manual robot to complete a set of tasks.
- Won the innovative design award in the competition
- Enabled the minimally actuated robot to traverse poles placed at a distance

Lua to x86 Compiler implemented in Python

IIT Kanpur

Dept. of Computer Science And Engineering, Guided by Prof. Subhajit Roy *2016*

- Implemeted a functional Compiler for the Lua Language to target x86, implemented in python.
- Supports Lua Dictionary, inherent string manipulations, basic Lua types.
- Supports function calls and recursions.

Courses

Courses Computational Learning Theory•Linear Algebra •Introduction to Programming •Data Structures •Advanced Data Structures •Machine Learning Principles •Compilers •Operating Systems •Computer Organization •Theory of Computation •NeuroBiology •Database •Linguistics •NLP •Optimization •Multi Agent Systems •Algorithmic Information Theory •Linguistic Universals •Linguistic Typology