Room 137, Hall 3, IIT Kanpur
Kanpur - 208016, India
aniketd@iitk.ac.in | 1998.aniket.das@gmail.com
Webpage : https://aniket1998.github.io/
Github : https://github.com/Aniket1998/
+91-9332558938

Aniket Das

Undergraduate, Electrical Engineering and Computer Science and Engineering, IIT Kanpur

Education

Indian Institute of Technology Kanpur, India
Double Major in Electrical Engineering and Computer Science and Engineering *Aug' 17 - Jun' 21 (Expected)*
GPA: 9.4/10 (5 Semesters)

Research Interests

Probabilistic Machine Learning, Approximate Inference, Optimization, Bayesian Nonparametrics, Representation Learning and Deep Generative Models, Computer Vision

Publications

Yatin Dandi, **Aniket Das**, Soumye Singhal, Piyush Rai, Vinay P. Namboodiri, "Joint Image and Video Generation using Residual Vectors" *Winter Conference on Applications of Computer Vision (WACV'20)* [Under Review]

Avik Pal*, **Aniket Das*** "TorchGAN: A Flexible Framework for GAN Training and Evaluation" *Journal of Machine Learning Research : Machine Learning Open Source Software (JMLR MLOSS)* [Under Review] [arXiv]

** indicates equal contribution*

Awards & Achievements

Academic Excellence Awardee for two consecutive Years at IIT Kanpur
Semester Exchange at Aalto University, Finland Among the **2 students** selected
Joint Entrance Exam Advanced 2017 All India Top 2 Percentile among 200,000 candidates
KVPY Scholarship Awardee All India Rank 240, awarded by Indian Institute of Science

Selected Projects

Probabilistic Models for Joint Image and Video Generation
Prof. Piyush Rai and Prof. Vinay P. Namboodiri, IIT Kanpur *Mar '19 - July '19*

- Investigated several models for video generation, forecasting and representation learning, with particular focus on video generation models and models that disentangle content and motion
- Developed a hierarchical model for joint image and video generation that generates a summary frame for the video, and models individual frames by adding residual vectors to the summary frame representation at each timestep.
- Developed an analogous hierarchy for models that disentangle content from motion, by adding to the base content representation, a residual content vector at every timestep
- Implemented proposed models for both VAEs and GANs. Performed human evaluation on Amazon MTurk and observed significant improvements in both image and video generation
- Paper is submitted to *Winter Conference on Applications of Computer Vision (WACV) 2020*. Currently working on generalising the image latent space interpolation to datasets of rotated objects

TorchGAN: A Flexible Framework for GAN Training and Evaluation
Independent Open Source Project : [Code] [Docs] [arXiv] *Dec'18 - Sep'19*

- Developed a lightweight customizable PyTorch framework for training and evaluation of GANs
- Wrote efficient implementations of various GAN models, losses, evaluation metrics and stability enhancement features and designed a customizable framework for effortlessly extending them
- Project hosted on Github has over 800 stars. Paper is currently submitted to the *Journal of Machine Learning Research: Machine Learning Open Source Software (JMLR MLOSS)*

Ongoing Projects

Stein's Method: Theory and Applications
Prof. Piyush Rai, IIT Kanpur *Sept. '19 - Present*

- Exploring avenues such as Amortized MCMC, Functional KL Minimization for Nonparametric Models, and optimization in Natural Parameter Space where employing Stein's Method for Variational Inference or Gradient Estimation may lead to improvements
- Currently surveying the literature on Stein Gradient Estimators, Amortized MCMC Algorithms, and Natural Gradient methods such as K-FAC and its variants, and "Inference via Weight Perturbation" algorithms like VADAM and VProp

Online Kernel Learning and Optimization Algorithms in RKHS
Prof. Ketan Rajawat, IIT Kanpur *Sept. '19 - Present*

- Investigating algorithms for functional optimization in Reproducing Kernel Hilbert Spaces and the problem of scaling kernel learning and nonparametric function approximation to streaming data
- Currently surveying the literature on Online Kernel Learning and Nonparametric Stochastic Optimization Algorithms

Skills

Languages: *Proficient*: Python, C, C++ *Familiar*: Julia, Octave, Javascript
Deep Learning Frameworks: Pytorch, Tensorflow, Flux.jl
Data Science Libraries: NumPy, Pandas, Pillow, Scipy, Scikit-Learn, Gensim
Utilities: Linux Shell, Git, Vim, Docker, LaTeX, Amazon AWS, Amazon Mechanical Turk

Relevant Coursework

Introduction to Programming **A**∗	Data Structures and Algorithms **A**
Linear Algebra & ODE **A**	Real Analysis and Multivariate Calculus **A**
Partial Differential Equations **A**	Complex Analysis **A**
Probability and Statistics **A**	Stochastic Processes *i*
Signals and Systems **A**	Statistical Signal Processing *i*
Topics in Probabilistic Modelling and Inference **A**	Convex Optimization *a*
Machine Learning for Signal Processing *i*	

A∗: Exceptional Performance (Top 1%) *i*: In progress *a*: Audit

Mentorship Roles

Project Mentor : Exploring Probabilistic Machine Learning
Programming Club, IIT Kanpur *May. '19 - July '19*

- Mentored a group of fourteen freshmen on Probabilistic Machine Learning and its applications
- Conducted lectures, authored weekly assignments and mentored projects on Bayesian Matrix Factorization, Black Box VI and Auto Encoding VB, Stepwise and Incremental EM, and SVI

Project Mentor: Exploring Generative Adversarial Networks
Association of Computing Activities, IIT Kanpur *Mar. '19 - May. '19*

- Mentored a group of eight freshmen on Deep Generative Models and Generative Adversarial Networks
- Conducted lectures and designed assignments for implementing GAN models, losses and metrics

Coordinator: Special Interest Group in Machine Learning
IIT Kanpur *Sept. '19 - Present*

- One of the four Coordinators of the SIGML, the Institute forum for student researchers in ML
- Responsible for delivering and conducting talks on current research and special topics in ML