

JAIVARDHAN KAPOOR

Senior Undergraduate, Electrical Engineering ◊ Indian Institute of Technology Kanpur
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EDUCATION

2015-Present	B.Tech. (Electrical Engineering)	IIT Kanpur	8.6/10
2015	Class XII (CBSE)	Nezamia Public School	92.8%
2013	Class X (ICSE)	Seth Anandram Jaipuria School	96.8%

ACADEMIC ACHIEVEMENTS

- Secured all India rank of **496** (amongst 150,000 candidates) in JEE Advanced, 2015
- Secured a rank of **485** in Kishore Vaigyanik Protsahan Yojana (KVPY)

PUBLICATIONS

- J. Kapoor, A. Vergari, M. Gomez-Rodriguez and I. Valera, "**Bayesian Nonparametric Hawkes Processes**", Accepted at the Bayesian Nonparametrics Workshop at NeurIPS 2018, Montreal.

RESEARCH INTERESTS

Bayesian Modeling & Inference	SG-MCMC, SMC, Bayesian Nonparametrics, Variational Inference
Causal Inference	Counterfactuals, Granger Causality, Causality in Fairness
Temporal Data	Time Series Analysis, Temporal Point Processes

INTERNSHIPS

Max Planck Institute for Intelligent Systems	Tuebingen, Germany
<i>June 2018 - December 2018</i>	<i>Supervised by Dr. Isabel Valera, Empirical Inference</i>

- Developed a highly modular framework to combine any count-based BNP with multivariate Hawkes processes
- Proposed framework ensures a proper prior on modeling scenarios with multiple users and dyadic interactions
- Devised approximate inference algorithms based on Sequential Monte Carlo
- Implemented generative processes and inference algorithms for various novel models.
- Executed experiments on synthetic as well as real-world data, and compared to related baselines

RESEARCH PROJECTS

Incremental Training of a 2-layer Neural Network [Link]	IIT Kanpur
<i>January 2018 - May 2018</i>	<i>Supervised by Dr. Purushottam Kar, CSE</i>

- Rephrased training of a 2-layer neural network in the form of Gradient Boosting with convergence guarantees
- Applied boosting to the hidden layer nodes for incremental training, serving as a warm start for backpropagation
- Evaluated the training on MNIST with different activation functions, observing significant pretraining gains

Survey on Convergence of Gradient Based Optimization Algorithms [Link]	IIT Kanpur
<i>March 2018 - April 2018</i>	<i>Supervised by Dr. Purushottam Kar, CSE</i>

- Reviewed popular deterministic and stochastic gradient-based optimization algorithms
- Provided convergence analyses of variants such as SGD, Momentum, AdaGrad, NAG and ADAM
- Reviewed and paraphrased recent work showing non-convergence of ADAM in certain cases

Statistical Identification of Multiple Bugs	IIT Kanpur
<i>September 2017 - November 2017</i>	<i>Supervised by Dr. Subhajit Roy, CSE</i>

- Reviewed current trends and surveyed various papers on statistical bug localization using graphical models
- Used ROSE compiler to instrument predicates for multiple runs of test programs
- Implemented an existing model based on biclustering approach on relevant bug identification datasets

Variational Inference using Normalizing Flows [Link]

January 2017 - May 2017

IIT Kanpur

Supervised by Dr. Piyush Rai, CSE

- Used normalizing flows to obtain a richer approximate posterior family for variational methods
- Implemented MNIST digit generation & classification with VAE and normalizing flows using TensorFlow
- Analyzed results on the MNIST dataset, with qualitative improvements over pre-existing posterior assumptions

TECHNICAL STRENGTHS

Computer Languages Python, Octave/MATLAB, Git

Software & Libraries L^AT_EX, PyTorch, PyStan, autograd, Unix, pandas

RELEVANT COURSES

Digital Signal Processing¹

Detection & Estimation Theory¹

Convex Optimization¹

Signals, Systems & Networks

Communication Systems

Statistical Inference¹

Bayesian Data Analysis¹

Statistical Learning Theory

Linear Algebra & Multivariate Calculus

Partial Differential Equations

Bayesian Machine Learning

Computational Cognitive Science

Data Structures & Algorithms

Natural Language Processing

Data Driven Program Analysis

POSITIONS OF RESPONSIBILITY

Antaragni 2016 - Cultural Festival of IIT Kanpur

Senior Executive, Design

April 2016 - October 2016

IIT Kanpur

- Organized the social initiatives of the festival to spread awareness among the youth
- Ideated and designed creative elements of the festival website from scratch
- Designed posters, ID card templates, backdrops, banners and festival merchandise on Adobe Photoshop

Counselling Service, IIT Kanpur

Student Guide

April 2016 - Present

IIT Kanpur

- Organized the Fresher Orientation Program for smooth induction of freshers' batch of 800 students
- Mentored and guided 6 freshmen in dealing with their emotional and academic predicaments

¹Ongoing Course