Bhuvesh Kumar kumarbhuvesh@gmail.com | bhuveshkumar.com | +1 404 259-4524

EDUCATION

Georgia Tech | Ph.D. in Computer Science - Interests: Machine Learning, Mechanism Design, Privacy, Deep Learning
Aug 2017 - May 2022 (Expected) | Advisors: Dr. Jacob Abernethy and Dr. Jamie Morgenstern | **GPA: 4.0/4.0**

IIT Kanpur | B.Tech in Computer Science and Engineering
Aug 2013- May 2017 | Kanpur, India | **GPA: 9.7/10**

PUBLICATIONS

[1] Learning Auctions with Robust Incentive Guarantees with Jacob Abernethy, Rachel Cummings, Jamie Morgenstern, Samuel Taggart. NeurIPS, 2019.
Preliminary version accepted at Learning in Presence of Strategic Behavior,EC 2019

[2] Bridging Truthfulness and Corruption-robustness in Multi-Armed Bandit Mechanisms with Jacob Abernethy, Thodoris Lykouris, and Yinglun Xu. Incentives in Machine Learning, ICML 2020.

[3] Active Regret Minimization with Expert Advice with Jacob Abernethy, and Venkatesh Saligrama. Under review.

[4] Accelerated Parallelizable Projection-Free Algorithm for the Nuclear-Norm Ball Constraint with Jun-Kun Wang, and Jacob Abernethy. Working paper.

[5] Online Learning for Pacing with Jamie Morgenstern, and Okke Schrijvers. Working paper.

INTERNSHIP EXPERIENCE

Research Intern | Facebook Research
Aug 2020 – Present | Menlo Park, CA
- Park of the Economics, Algorithms, and Optimization research team in Core Data Science.
- Working on automatic bid pacing for budget constraint ad campaigns and developed a no-regret pacing algorithm.

Software Engineering ML PhD Intern | Facebook
May 2019 – July 2019 | Menlo Park, CA
- Optimized for Return on Ad Spend for ads ranking and products ranking in Dynamic Product Ads using deep learning.
- Introduced a new ML model and increased ad revenue while decreasing latency and saving 60 TB memory usage (86 % decrease).

Visiting Graduate Student | Northwestern University
May 2018 – June 2018 | Evanston, IL
- Worked on estimating Ising models
- Analyzed a regularized variant of the maximum likelihood approach for the problem of approximating Ising distributions in the high-temperature regime.

Research Intern | Johns Hopkins University
May 2016 – Aug 2016 | Baltimore, MD
- Worked on stochastic methods for Kernel PCA by extending Stochastic PCA methods using non linear feature maps.
- Used Randomized Fourier features and deterministic features using Taylor series to approximate the kernel evaluation.

Software Engineering Intern | Nike
May 2015 - June 2015 | Dubai, UAE
- Developed and deployed a ticketing system using Amazon AWS for a Nike event attended by over a 1000 guests.
- Made an android app and set up an SQL server to check in guests for the event based on the unique QR codes.
- Developed a website for the same event integrating social tagging in 360 panoramas.
- Facebook Graph API, email addresses, and the Twitter APIs were used to fetch data, perform tagging, and sharing.

OTHER RESEARCH EXPERIENCE

Action Recognition in Videos | Dr. Gaurav Sharma, IITK
Aug 2016 – May 2017
- Used deep learning combined with trajectory pooled features for action recognition in videos and achieved state of the art results.
- Implemented alternating minimization for homography estimation to speed up train and test time by 50%.

Non Convex Methods for Surveillance | Dr. Prateek Jain, Microsoft Research and Dr. Purushottam Kar, IITK
Aug 2016 – December 2016
- Used alternating minimization technique to solve the non-convex Robust PCA objective for background subtraction.
- Extended the Robust PCA for still camera videos to videos with camera motion by devising fast methods for homography estimation.

Automatic Video Surveillance | Dr. H. Karnick, IITK
Jan 2016 – April 2016
- Developed methods for entity recognition for traffic surveillance from traffic camera videos using deep learning.
- Implemented Entity recognition using CRFs and RCNN, and face detection and recognition using Viola-Jones and deep nets.

TEACHING

- **TA :** Machine Learning Theory, GaTech (Fall 18, Fall 19) ; ESC101, IIT Kanpur (Fall 16, Spring 17)

LEADERSHIP / SERVICE

- **Conference reviewer for:** NeurIPS, ICML, COLT, ALT, EC, SODA
- **Faculty Hiring Student Nominee | School of Computer Science, GaTech:** Student representative in faculty meetings for faculty hiring. Organized students-candidate meetings and presented student body's feedback for faculty hiring decisions.
- **Co-organizer | ACO Student seminar, GaTech:** Organized weekly Algorithms, Combinatorics, Optimization, and Machine Learning seminars.
- **Co-organizer | CoC Happy Hour, GaTech:** Organized weekly social gathering for the grad students of the college.
- **Coordinator | Programming Club, IITK:** Organised various programming contests, Hackathons, summer projects, programming workshops and events for the community while managing a team of over 15 secretaries.
- **Group Leader| Science Coffeehouse, IITK:** Organized regular meets, contests and managed the administrative tasks for the Science discussion group at IITK.

SELECT PROJECTS

- **photoCENTER - Image/Video Processing App:** Developed an open-source multi-platform software to edit videos and images including background extraction capabilities using computer vision techniques.
- **Artify:** Designed a web app in Django for deep neural style transfer written in Caffe.
- **ColourIT:** Developed a learning algorithm to automatically colour a grayscale image using multiple regressors and deep learning.
- **Research Group Website** Designed a package to manage a research group's website by implementing self populating project pages, group members, publications, news, and collaborators using MEAN stack.

AWARDS

- Awarded **Chair's fellowship** by The School of CS, Georgia Tech.
- **Academic Excellence Award**, IIT Kanpur 14',15',16' (Dean's List)
- Secured **All India Rank 269** in JEE Advanced and **All India Rank 321** in JEE Mains, 2013 among the 1.65 million candidates.
- Awarded the **KVPY fellowship 2011** and **NTSE scholarship 2009** by the Govt. of India.
- Cleared the **Mathematics**, **Informatics**, **Physics**, and **Astronomy** Olympiads organised by the Govt. of India.

SKILLS

Languages
Expert: C++ • Python • C
Proficient: Matlab • Octave

Scientific Libraries
Tensorflow • SKlearn • PyTorch • Caffe • OpenCV • pandas

General Tools
Git • LaTeX • GNUplot • vim • MySQL • Presto • OpenGL

Webdev
Node.js • web.py • Django • PHP • Javascript • HTML • CSS