

Harvineet Singh

CONTACT INFORMATION

Ph.D. Student
Center for Data Science
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RESEARCH INTERESTS

Interactive Machine Learning, Causal Inference, Time Series Analysis, Digital Health

EDUCATION

Ph.D. in Data Science, CGPA: 4.0/4.0 (Year 2018 - 2019)
Center for Data Science, New York University, NY, US August 2018 - Present

Integrated Master of Technology in Mathematics and Computing, CGPA: 8.7/10
Indian Institute of Technology (IIT) Delhi, India July 2010 - July 2015

Central Board of Secondary Education, Class XII, Marks(%): 92.40
D.A.V. Public School, Kota, Rajasthan 2010

PUBLICATIONS

- Harvineet Singh, Rina Singh, Vishwali Mhasawade and Rumi Chunara.
Fair Predictors under Distribution Shift.
Workshop on Fair ML for Health at Conference on Neural Information Processing Systems (NeurIPS) 2019. *Oral Presentation.* [Link].
- Gaurush Hiranandani*, Harvineet Singh*, Prakhar Gupta*, Iftikhar A. Burhanuddin, Zheng Wen and Branislav Kveton.
Cascading Linear Submodular Bandits: Accounting for Position Bias and Diversity in Online Learning to Rank.
Conference on Uncertainty in Artificial Intelligence, (UAI) 2019. *Oral Presentation.* [Link].
- AadHAVAN M. Nambhi*, Bhanu P. R. Guda*, Aarsh P. Agarwal*, Gaurav Verma, Harvineet Singh and Iftikhar A. Burhanuddin.
Stuck? No Worries!: Task-aware Command Recommendation and Proactive Help for Analysts.
ACM International Conference on User Modeling, Adaptation, and Personalization, (UMAP) 2019. [Link].
- Moumita Sinha, Vishwa Vinay and Harvineet Singh.
Modeling Time to Open of Emails with a Latent State for User Engagement Level.
ACM International Conference on Web Search and Data Mining, (WSDM) 2018. [Link].
- Ritwick Chaudhry*, Harvineet Singh*, Pradeep Dogga, and Shiv Saini.
Modeling Hint-Taking Behavior and Knowledge State of Students with Multi-Task Learning.
International Conference on Educational Data Mining, (EDM) 2018. [Link].
- Sumit Shekhar, Dhruv Singal, Harvineet Singh, Manav Kedia and Akhil Shetty.
Show and Recall: Learning What Makes Videos Memorable.
Workshop on MBCC at IEEE International Conference on Computer Vision (ICCV) 2017. [Link].
- Siddharth Bora, Harvineet Singh, Anirban Sen, Amitabha Bagchi and Parag Singla.
On the role of conductance, geography and topology in predicting hashtag virality.
Springer Journal on Social Network Analysis and Mining (SNAM) 2015. [Link].

*Equal Contribution

WORK EXPERIENCE **Adobe Research**, India : Research Engineer

Member of Big Data Experience Lab

July 2015 - August 2018

Devised and prototyped machine learning algorithms for problems in customer behavior analytics. Worked on transferring technologies to Adobe's digital marketing solutions.

Adobe Research, India : Research Internship

PI: Dr. Moumita Sinha

Predicting abandonment of online shopping carts

May 2014 - July 2014

Devised an algorithm to predict return of customers after an online shopping session and tested it on large-scale web clickstream datasets. Work productized as a feature in Adobe Experience Cloud.

Adobe Research, India : Research Internship

PI: Mohit Garg

Assisting social content creators by suggesting what, when and how to post

May 2013 - July 2013

Worked on a system to infer user interests and demographic attributes from online social feed. Developed an approach based on text mining and graph analysis to find most receptive user segments. Implemented a web-based tool, as a proof-of-concept prototype, built using HTML, PHP and Python to fetch Twitter feeds and display results of data analysis.

PATENTS

- Sumit Shekhar, Dhruv Singal, Harvineet Singh and Atanu Sinha. 'Summarizing Video Content based on Memorability of the Video Content'. U.S. Patent No. 10/311,913.
- Moumita Sinha, Kandarp S. Khandwala, Harvineet Singh and D. P. Tejas. 'Predicting Unsubscription of Subscribing Users'. U.S. Patent No. 16/192,517.
- Prakhar Gupta, Iftikhar Ahamath Burhanuddin, Harvineet Singh and Atanu Sinha. 'Intelligent Analytics Interface'. U.S. Patent No. 10,546,003.

AWARDS AND
ACHIEVEMENTS

- Awarded **HRD Scholarship** by Ministry of Human Resource Development for academic excellence at IIT, 2014.
- **IITD Semester Merit Award** for meritorious academic performance (top 7% of batch).
- **All India Rank 813** in IIT-JEE (entrance examination) 2010 among 0.46 million students.
- Awarded **Travel Grant** to attend UAI 2019, FairML4H@NeurIPS 2019.

SELECTED
RESEARCH
PROJECTS

Online Recommendation of Diversified Lists

Dr. Branislav Kveton, Adobe Research

January 2017 - Present

- Modeled the problem of personalizing recommendation lists to user interests with an objective of maximizing probability of a click on the list. [**UAI 2019**]
- Developed an online learning algorithm with provable guarantees that learns from click feedback.

Machine Learning for Online Education

Dr. Shiv Kumar Saini, Adobe Research

May 2017 - November 2017

- Developed a model for estimating knowledge state of students taking online assessments.
- Proposed a memory-augmented neural network trained jointly on two tasks, namely, students' knowledge state prediction and hint-usage prediction. [**EDM 2018**]
- Demonstrated state-of-the-art performance on both tasks with AUC improvement of 2%.

Video Summarization with Memorability Objective

Dr. Sumit Shekhar, Adobe Research

December 2016 - August 2017

- Designed and implemented a system to create memorable summaries of user-generated videos.
- Introduced a method for video memorability estimation using video semantics, saliency and color.
- Solved a submodular optimization problem to create video summaries, achieving accuracies at par with state-of-the-art methods. [**ICCV Workshop 2017**]

PROFESSIONAL SERVICE	<p>Teaching Assistant: Taught tutorial classes and guided students for 2 courses at IIT Delhi.</p> <ul style="list-style-type: none"> • MAL 180: Discrete Mathematical Structures July 2014 - November 2014 • MAL 111: Intro to Analysis and Differential Eqns. July 2013 - November 2013 <p>Paper Reviewer: ML4H@NeurIPS 2019, RecSys 2017 (sub-reviewer), UAI 2017 (sub-reviewer).</p>	
PRESS COVERAGE OF WORK	<p>Churn Prediction in Email Marketing</p> <ul style="list-style-type: none"> • ‘Adobe wants to bring its AI smarts to email marketing campaigns’. TechCrunch. August 29, 2017. [Link] • ‘Adobe Previews In-Development Features at Summit 2016’. Techvibes. March 25, 2016. [Link] 	
POSITIONS OF RESPONSIBILITY	<p>Internship Mentor, ARISE Program, NYU Tandon</p> <ul style="list-style-type: none"> • Mentored two high school students in a STEM research exposure program. <p>Internship Project Supervisor, Adobe Research</p> <ul style="list-style-type: none"> • Ritwick Chaudhry and Pradeep Dogga, <i>Personal assistants for online education</i> • Neha Banerjee and Sahil Garg, <i>Optimal send time strategy for email campaigns</i> • Stefanie Baby, Akash Gupta and Varun Rawal, <i>Multi-view learning for user behavior prediction</i> <p>Teaching Volunteer, Aarohan NGO</p> <ul style="list-style-type: none"> • Taught students from a government school supplementing their higher secondary education. <p>Hostel Captain, BSA (Board for Sports Activities) IIT Delhi</p> <ul style="list-style-type: none"> • Led hostel Basketball team in inter-hostel tournaments finishing with Bronze medal in 2014. 	
TECHNICAL SKILLS	<p>Programming Languages: (Proficient) Python, R; (Familiar) MATLAB, Java, JavaScript</p> <p>ML Frameworks: PyTorch, Tensorflow, Apache Spark</p> <p>Applications and Tools: Basic Bash Scripting, Git, L^AT_EX</p>	
RELEVANT COURSES	<p>Computer Science</p> <p>Fundamentals of Machine Learning</p> <p>Analysis and Design of Algorithms</p> <p>Programming Languages</p> <p>Database Management Systems</p>	<p>Statistics, Mathematics</p> <p>Probability and Stochastic Processes</p> <p>Multivariate Statistical Methods</p> <p>Optimization Methods and Applications</p> <p>Probabilistic Time Series Analysis</p>