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Paramveer Dhillon

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Current Employment

7/19- University of Michigan, Ann Arbor, MI, U.S.A.
Assistant Professor, School of Information
Affiliate Faculty, Computer Science & Engineering (CSE), School of Engineering.
Affiliate Faculty, Michigan Institute for Data Science (MIDAS).

7/19- Massachusetts Institute of Technology, Cambridge, MA, U.S.A.
Digital Fellow, MIT Initiative on the Digital Economy (IDE).

Education

9/10-7/15 University of Pennsylvania, Philadelphia, PA, U.S.A.
A.M. in Statistics; M.S.E. & Ph.D. in Computer & Information Science.
Advisors: Professors Lyle Ungar, Dean Foster, & James Gee.
Ph.D. Dissertation Title: "Advances in Spectral Learning with Applications to Text Analysis & Brain Imaging."
(*Winner of 2015 Morris & Dorothy Rubinoff Best Dissertation Award.*)

7/03-5/07 Punjab Engineering College, Chandigarh, India.
B.E (First Class Honors) in Electronics & Electrical Communications Engineering.

Past Employment (Including Summer Internships)

7/17-6/19 Massachusetts Institute of Technology, Cambridge, MA, U.S.A.
Research Associate, Sloan School of Management.

8/15-6/17 Massachusetts Institute of Technology, Cambridge, MA, U.S.A.
Postdoctoral Researcher, Sloan School of Management.
Sponsor: Professor Sinan Aral.

6-9/{10,11} Yahoo Research, Santa Clara, CA, U.S.A.
Summer Intern, Machine Learning Group.

Mentor(s): Dr. Sathiya Keerthi, Dr. Olivier Chapelle.

5-8/09 Information Sciences Institute @ USC, Los Angeles, CA, U.S.A.
Summer Intern, Natural Language Processing Group.
Mentor(s): Professor David Chiang.

5-8/08 Max Planck Institute for Biological Cybernetics, Tuebingen, Germany.
Summer Intern, Empirical Inference Group.
Mentor(s): Dr. Christoph Lampert.

5-8/06 Universitat Autònoma de Barcelona, Barcelona, Spain.
Summer Intern, Computer Vision Center.
Mentor(s): Professor Jordi Gonzàlez.

Research Interests

1). Machine Learning; 2). Computational Social Science; 3). NLP; 4). Information Systems.

Publications

(Citations: 888, h-index: 13, i10-index: 18 as of July 31, 2020)
Google Scholar Profile: https://goo.gl/FEsnE8

Acronyms for conferences/journals wherever applicable:

- General Science Venues
  PNAS: Proceedings of the National Academy of Sciences.
- Statistical Machine Learning/AI venues
  JMLR: Journal of Machine Learning Research; NeurIPS: Advances in Neural Information Processing Systems Conference; ICML: International Conference on Machine Learning; AISTATS: International Conference on Artificial Intelligence and Statistics; ECML: European Conference on Machine Learning.
- NLP/Computational Linguistics venues
  EMNLP: International Conference on Empirical Methods in Natural Language Processing; ACL: Annual Conference of the Association for Computational Linguistics; COLING: International Conference on Computational Linguistics.
- Data Mining/Information Management venues
  ICDM: International Conference on Data Mining; CIKM: International Conference on Information and Knowledge Management.

- (Medical, Neuro) Imaging venues
  ISBI: IEEE International Symposium on Biomedical Imaging; MICCAI: International Conference on Medical Image Computing and Computer Assisted Intervention.

2020/24 "Interdependence and the Cost of Uncoordinated Responses to COVID-19."
David Holtz, Michael Zhao, Seth Benzell, Cathy Cao, Amin Rahimian, Jeremy Yang, Jennifer Allen, Avinash Collis, Alex Moehring, Tara Sowrirajan, Dipayan Ghosh, Yunhao Zhang, **Paramveer Dhillon**, Christos Nicolaides, Dean Eckles, & Sinan Aral.
PNAS

2020/23 "Digital Paywall Design: Implications for Content Demand & Subscriptions."
Sinan Aral & **Paramveer Dhillon**.
Management Science (Forthcoming)

2020/22 "Is Deep Learning a Game Changer for Marketing Analytics?"
Glen Urban, Artem Timoshenko, **Paramveer Dhillon**, & John Hauser.
MIT Sloan Management Review

2018/21 "Social influence maximization under empirical influence models."
Sinan Aral & **Paramveer Dhillon**.
Nature Human Behaviour

2015/20 "Eigenwords: Spectral Word Embeddings."
Paramveer Dhillon, Dean Foster & Lyle Ungar.
JMLR

2014/19 "Subject-specific functional parcellation via Prior Based Eigenanatomy."
Paramveer Dhillon, Lyle Ungar, Dave Wolk, Sandhitsu Das, James Gee, & Brian Avants.
NeuroImage

2013/18 "New Subsampling Algorithms for Fast Least Squares Regression."
Paramveer Dhillon, Yichao Lu, Dean Foster, & Lyle Ungar.
NeurIPS (Acceptance Rate: 25.4%)

2013/17 "Faster Ridge Regression via Subsampled Randomized Hadamard Transform."
Yichao Lu, **Paramveer Dhillon**, Dean Foster, & Lyle Ungar.
NeurIPS (Acceptance Rate: 25.4%)

2013/16 "A Risk Comparison of Ordinary Least Squares vs Ridge Regression."
Paramveer Dhillon, Dean Foster, Sham Kakade, & Lyle Ungar
JMLR

2012/15 "Two Step CCA: A new spectral method for estimating vector models of words."
Paramveer Dhillon, Jordan Rodu, Dean Foster, & Lyle Ungar.
ICML (Acceptance Rate: 27.3%)

2012/14 "Spectral Dependency Parsing with Latent Variables."
Paramveer Dhillon, Jordan Rodu, Michael Collins, Dean Foster, & Lyle Ungar.
EMNLP (Acceptance Rate: 25.0%)

2012/13 "Deterministic Annealing for Semi-Supervised Structured Output Learning."
Paramveer Dhillon, Sathiya Keerthi, Olivier Chapelle, Kedar Bellare, & S. Sundararajan.
AISTATS (Acceptance Rate: 33.5%)

2012/12 "Eigenanatomy improves detection power for longitudinal cortical change."
Brian Avants, **Paramveer Dhillon**, Benjamin Kandel, Philip Cook, Corey McMillan, Murray Grossman & James Gee.
MICCAI (Acceptance Rate: 25%)

2012/11 "Partial Sparse Canonical Correlation Analysis (PSCCA) for population studies in Medical Imaging."
Paramveer Dhillon, Brian Avants, Lyle Ungar, & James Gee.
ISBI (Acceptance Rate: Unknown)

2012/10 "Metric Learning for Graph-based Domain Adaptation."
Paramveer Dhillon, Partha Talukdar, & Koby Crammer.
COLING (Acceptance Rate: 34.0%)

2011/9 "Minimum Description Length Penalization for Group and Multi-Task Sparse Learning."
Paramveer Dhillon, Dean Foster & Lyle Ungar.
JMLR

2011/8 "Multi View Learning of Word Embeddings via Canonical Correlation Analysis."
Paramveer Dhillon, Dean Foster, & Lyle Ungar.
NeurIPS (Acceptance Rate: 21.8%)

2011/7 "Semi-supervised Multi-task Learning of Structured Prediction Models for Web Information Extraction."
Paramveer Dhillon, S. Sundararajan, & Sathiya Keerthi.
CIKM (Acceptance Rate: 15.0%)

2010/6 "Feature Selection using Multiple Streams."
Paramveer Dhillon, Dean Foster, & Lyle Ungar.
AISTATS (Acceptance Rate: 40.6%)

2010/5 "A New Approach to Lexical Disambiguation of Arabic Text."
Rushin Shah, **Paramveer Dhillon**, Mark Liberman, Dean Foster, Mohamed Maamouri, & Lyle Ungar.
EMNLP (Acceptance Rate: 25.0%)

2010/4 "Learning Better Data Representation using Inference-Driven Metric Learning (IDML)."
Paramveer Dhillon, Partha Talukdar, & Koby Crammer.
ACL (Acceptance Rate: 22.0%)

2009/3 "Transfer Learning, Feature Selection, and Word Sense Disambiguation."
Paramveer Dhillon & Lyle Ungar.
ACL (Acceptance Rate: 24.6%)

2009/2 "Multi-Task Feature Selection Using the Multiple Inclusion Criterion (MIC)."
Paramveer Dhillon, Brian Tomasik, Dean Foster, & Lyle Ungar.
ECML (Acceptance Rate: 24.9%)

2008/1 "Efficient Feature Selection in the Presence of Multiple Feature Classes."
Paramveer Dhillon, Dean Foster, & Lyle Ungar.
ICDM (Acceptance Rate: 19.9%)

Teaching

Instructor

School of Information, University of Michigan

F '19, '20 Course: SI 671/721- Data Mining.
F '20, W '21 Course: SIADS 642- Introduction to Deep Learning. (*Online*)
W '21 Course: SIADS 532- Data Mining I. (*Online*)

Propulsion Academy; Zurich, Switzerland

S '17 Course: Introduction to NLP.

Guest Lectures

School of Information, University of Michigan

F '19 Course: SI 425- Introduction to User Modeling.
Instructor: Prof. Tanya Rosenblat.

School of Information, University of Michigan

F '19 Course: SI 670 -Applied Machine Learning.
Instructor: Prof. Grant Schoenebeck.

Massachusetts Institute of Technology.

F '15, '16, '18 Course: Analytics Lab.
Instructors: Profs. Erik Brynjolfsson and Sinan Aral.

University of Pennsylvania.

F '13 Course: CIS 520- Machine Learning.
Instructor: Prof. Lyle Ungar.

Certifications

Massachusetts Institute of Technology.

'15 Kaufman Teaching Certificate Program (KTCP).

University of Pennsylvania.

'13 Center for Teaching and Learning (CTL) Teaching Excellence Certificate.

Teaching Assistance

University of Pennsylvania.

Courses: Introduction to Machine Learning (Prof. Ben Taskar); Introduction to Algorithms (Prof. Sanjeev Khanna); Computer Systems I, II (Diana Palsetia).

Students

I. Research Advising

Current

1. Yulin Yu (PhD; SI, University of Michigan) *F '20-*
2. Yachuan Liu (PhD; SI, University of Michigan) *F '20-*
3. Evan Weissburg (BS; CSE, University of Michigan) *F '19-*
4. Arya Kumar (BS; CSE, University of Michigan) *W '20-*
5. Jiapeng Guo (BS; Data Science, University of Michigan) *W '20-*
6. Vishal Nayak (BS; CSE, University of Michigan) *F '19-*

Past

1. Joshua Silverberg (BS; CSE, University of Michigan) *F '19-W '20*
2. Mariana Ortiz Luna (BS; CSE, University of Michigan) *F '19-W '20*
3. Makarand Parigi (BS; CSE, University of Michigan) *F '19-W '20*

II. Thesis Committee

1. Zhuofeng Wu (PhD; SI, University of Michigan)
2. Zachary Blevins (PhD; SEAS, University of Michigan)
3. Yulin Yu (MTOP; SI, University of Michigan)

Grants

2020-'23 $300,000 *Sponsored Research Grant* from Boston Globe Media LLC. (co-PI with Dean Eckles and Sinan Aral)
Designing personalized Recommender Systems and Digital Paywalls.

2017-'20 $300,000 *Sponsored Research Grant* from Boston Globe Media LLC. (co-PI with Sinan Aral)
Assessing the Economic Value of various Digital Content Pricing Strategies via Randomized Experimentation.

Service to the profession

I. Reviewer/ Program Committee Member (Conferences)
   1. Neural Information Processing Systems (NeurIPS) 2013-20
   2. International Conference on Machine Learning (ICML) 2013-20
   3. International Conference on Artificial Intelligence & Statistics (AISTATS) 2011, 2014-20
   4. International Conference on Learning Representations (ICLR) 2018-20
   5. Annual Conference of the Association for the Advancement of Artificial Intelligence (AAAI) 2015, 2020
   6. International Joint Conference on Artificial Intelligence (IJCAI) 2019-20
   7. Annual Conference of the North American Chapter of the Association for Computational Linguistics (NAACL) 2019
   8. International Conference on Empirical Methods in Natural Language Processing (EMNLP) 2020
   9. Conference on Information System & Technology (CIST) 2019-20
   10. International Conference on Computational Social Science (IC2S2) 2020
   11. International Conference on Web and Social Media (ICWSM) 2020
   12. Invited Paper Discussant at the Workshop on Information Systems & Economics (WISE), 2017

II. Reviewer (Journals)
   1. Nature Human Behaviour
   2. Journal of Machine Learning Research (JMLR)
   3. Journal of Artificial Intelligence Research (JAIR)
   4. Machine Learning Journal (MLJ)
   5. Management Science
   6. Marketing Science
   7. Quantitative Marketing & Economics (QME)

8. IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
9. IEEE Transactions on Knowledge and Data Engineering (TKDE)
10. IEEE Transactions on Biomedical Engineering (TBME)
11. Data Mining & Knowledge Discovery (DMKD)

III. Workshop/Conference Organization

1. Workshop on Vector Space Models in NLP at NAACL 2015.
   - Co-organizer with Percy Liang (Stanford University), Phil Blunsom (DeepMind & Oxford University), & Shay Cohen (University of Edinburgh)

Research Presentations (excluding job-market talks & talks by co-authors.)

I. "Optimizing Targeting Policies via Sequential Experimentation for User Retention"

1. NeurIPS 2019 Workshop *"Do the right thing: machine learning and causal inference for improved decision making"*, 12/2019.
2. Conference on Digital Experimentation (CODE), 10/2019.

II. "Linear Methods for Big Data." (Paper(s): 8, 15, 17, 18, 20)

1. Harvard University (IQSS Seminar), 03/2017.
2. University of North Carolina, Chapel Hill, (CS Seminar) 03/2017.
3. Harvard University (EconCS Seminar), 02/2017.
4. Carnegie Mellon University, (BT Seminar) 01/2017.
5. MIT (CSAIL Seminar), 05/2015.
6. Microsoft Research NY, 02/2014.
7. Temple University (CS Seminar), 11/2011.
8. New York Academy of Sciences (ML symposium), 09/2011.

III. "Influence Maximization Revisited." (Paper(s): 21)

1. Harvard University (EconCS Seminar), 03/2017.
2. Workshop on Information in Networks (WIN), 10/2015.
3. INFORMS (Session on Social Analytics), 10/2015.
4. Conference on Inference Transmission in Networks at Harvard University, 05/2015.

IV. "Digital Paywall Design" (Paper(s): 23)

1. NBER Summer Institute on Economics of IT and Digitization, 07/2017 *Discussant: Matt Gentzkow (Stanford University)*.
2. Workshop on Information Systems & Economics (WISE), 12/2016.
3. Winter Conference on Business Analytics (WCBA), 03/2016.
4. Conference on Digital Experimentation (CODE), 10/2015.

Awards & Honors

(a) Runner-up overall best paper award at the Workshop on Information System & Economics (WISE) 2016.

(b) Received the 2015 Morris & Dorothy Rubinoff Best Dissertation Award given by Penn Engineering.

(c) Received the prestigious *Provost's Fellowship* to pursue graduate studies (Ph.D) at University of Southern California (USC).

(d) Received Student Travel Award for presenting the paper at ICDM 2008, NeurIPS 2011, 2013, & ICML 2012 conferences.

(e) Departmental Honors & College Color (a medal) for outstanding performance in undergraduate studies.

Immigration Status

U.S.A Permanent Resident (Green Card).

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