

Rishabh Mehrotra

CONTACT INFORMATION

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RESEARCH INTERESTS

Machine Learning, Recommender Systems

EDUCATION

University College London, London, United Kingdom

PhD in Computer Science
Thesis: *Understanding & Inferring User Needs & Tasks*
Advisor: Dr. Emine Yilmaz
Duration: Feb 2014 - Nov 2017

Birla Institute of Technology & Science, (BITS Pilani) India

Integrated Dual Degree: BE(Hons.) Computer Science & MSc(Hons.) Mathematics
Duration: August 2008 - June 2013
Master's Thesis: Sparsity & Structured Sparsity for Learning Coupled Representations from Multi-View Data

PROFESSIONAL ACTIVITIES

Co-Organizer: TREC Tasks Track 2015 - 2017 ([website](#)), WSDM 2018 Workshop on Learning from User Interactions ([website](#)), WSDM 2020 Workshop on Late Based User Modeling ([website](#))
Sr PC Member: WWW 2020
PC Member: WWW 2016-2020, SIGIR 2016-2020, NAACL 2017-2018, CIKM 2017-2020, NeurIPS 2017-2018, RecSys 2016-2018, AAAI 2017

HONORS AND AWARDS

Y. Ali Grant for Research, 2016
ACM SIGIR Travel Grants 2015, 2016, 2017
Research on *Search Tasks* supported by *Google Faculty Research Award*, 2015
Google Student Grant to present work on Web Search Tasks at 24th WWW 2015.
Donald B Crouch Grant to present work on topic models at 36th ACM SIGIR 2013.
Selected for Google Summer of Code, May 2012.
Gold Medal, Project Presentation APOGEE 2012 for OmniscientBot.
1st Position, ACM ICL coding competition, APOGEE 2010.

RELEVANT EXPERIENCE

Spotify Research, London, UK

Senior Research Scientist
Research Scientist

Developing machine learning algorithms for multi-stakeholder optimization in 2-sided marketplace ecosystems; with specific focus on contextual bandit algorithms & reinforcement learning.

Aug'19 - now

Nov'17 - July'19

UserContext.AI, London, UK

Co-founder & Chief Research Officer

Developed techniques for learning from user interactions, and understanding user feedback signals.

Jan'17 - Oct'17

Microsoft Research, Redmond, US

Research Intern (Measurement Sciences Team)

Mentors: Ahmed Hassan Awadallah, Imed Zitouni

June'16 - Sept'16

Developed terascale machine learning based solutions for understanding user interaction sequences for satisfaction prediction. Mining terabytes of logs for developing task based satisfaction metrics.

Microsoft Research, New York, US

Research Intern

Mar'16 - June'16

Mentor: Fernando Diaz, Hanna Wallach

Developed techniques for auditing search engines for demographic bias in performance.

Microsoft Research, Redmond, US

Research Intern

July'15 - Sept'15

Mentors: Susan Dumais, Paul Bennett, Jaime Teevan

Responsible for designing and developing terascale machine learning based solutions for cross-domain personalization. Mining terabytes of user logs to derive insights for personalization.

Microsoft Bing, London, UK

Applied Scientist Intern

April'15 - June'15

Mentors: Abhishek Arun, Katja Hofmann

Developed techniques for counterfactual estimation of online metrics for the Related Searches team.

Goldman Sachs, Reference Data Technology

Technology Analyst

June'13 - Dec'13

Developed Regression Testing framework for an event-driven SOA based framework.

Statistical Machine Learning Group, NICTA, Canberra, Australia

Research Intern

May'12 - July'12

Supervisor: Scott Sanner, Wray Buntine

Worked on improving Topic Modeling (LDA) for microblogs. Resulting paper accepted at SIGIR'13.

TUTORIALS & COURSES

Recommendations in a Marketplace ([link](#))

Rishabh Mehrotra, Ben Carterette
RecSys 2019, Copenhagen, Denmark

Understanding & Inferring User Tasks and Needs ([link](#))

Rishabh Mehrotra, Emine Yilmaz, Ahmed Hassan Awadallah
WWW 2018, Lyon, France

Learning from User Interactions ([link](#))

Rishabh Mehrotra
Russian Summer School on Information Retrieval (RuSSIR) 2018, Kazan, Russia

Task based Search: Understanding & Inferring User Tasks and Needs ([link](#))

Rishabh Mehrotra, Emine Yilmaz, Ahmed Hassan Awadallah
CIKM 2017, Singapore

Query Log Mining for Inferring User Tasks and Needs ([link](#))

Rishabh Mehrotra and Emine Yilmaz
Search Solutions, London 2016

PUBLICATIONS

Bandit based Optimization of Multiple Objectives on a Music Streaming Platform

Rishabh Mehrotra, Niannan Xue, Mounia Lalmas
KDD 2020

Learning with Limited Labels via Momentum Damped & Differentially Weighted Optimization

Rishabh Mehrotra, Ashish Gupta
KDD 2020

Counterfactual Evaluation of Slate Recommendations with Sequential Reward Interactions

James McInerney, Brian Brost, Praveen Chandar, Rishabh Mehrotra, Ben Carterette
KDD 2020

Advances in Recommender Systems: From Multi-stakeholder Marketplaces to Automated RecSys

Rishabh Mehrotra, Ben Carterette, Yong Li, Quanming Yao, James Tin-Yau Kwok, Isabelle Guyon, Qiang Yang
KDD 2020 Tutorials

Leveraging Behavioral Heterogeneity Across Markets for Cross-Market Training of Recommender Systems

Kevin Roitero, Ben Carterette, Rishabh Mehrotra, Mounia Lalmas
WWW 2020

Algorithmic Effects on the Diversity of Consumption on Spotify

Ashton Anderson, Lucas Maystre, Ian Anderson, Rishabh Mehrotra, Mounia Lalmas
WWW 2020

Joint Attention Neural Model for Demand Prediction in Online Marketplaces

A Gupta, R Mehrotra
NLDL 2020

Jointly Leveraging Intent and Interaction Signals to Predict User Satisfaction with Slate Recommendations

Rishabh Mehrotra, Mounia Lalmas, Doug Kenney, Thomas Lim-Meng, Golli Hashemian
WWW 2019

Deriving User- and Content-specific Rewards for Contextual Bandits

Paolo Dragone, Rishabh Mehrotra, Mounia Lalmas
WWW 2019

The Music Streaming Sessions Dataset

Brian Brost, Rishabh Mehrotra, Tristan Jehan
WWW 2019

Towards Task Understanding in Visual Settings

Sebastin Santy, W Zulfikar, Rishabh Mehrotra, Emine Yilmaz
AAAI 2019 (Student Abstracts)

Towards a Fair Marketplace: Counterfactual Evaluation of the trade-off between Relevance, Fairness & Satisfaction in Recommendation Systems

Rishabh Mehrotra, James McInerney, Hugues Bouchard, Mounia Lalmas and Fernando Diaz
CIKM 2018

Neural Attention Reader for Video Comprehension

Ashish Gupta, Rishabh Mehrotra and Manish Gupta
KDD 2018, Deep Learning Day

Explore, Exploit, and Explain: Personalizing Explainable Recommendations with Bandits

James McInerney, Benjamin Lacker, Samantha Hansen, Karl Higley, Hugues Bouchard, Alois Gru-
son, Rishabh Mehrotra
RecSys 2018

LearnIR: WSDM 2018 Workshop on Learning from User Interactions

Rishabh Mehrotra, Ahmed Hassan Awadallah and Emine Yilmaz
WSDM 2018

Task Embeddings: Learning Query Embeddings using Task Context

Rishabh Mehrotra, Emine Yilmaz
CIKM 2017

Deep Sequential Models for Task Satisfaction Prediction

Rishabh Mehrotra, Ahmed Hassan Awadallah, Milad Shokouhi, Emine Yilmaz, Imed Zitouni, Ahmed
El Kholly and Madian Khabza
CIKM 2017

**Predictive Power of Online and Offline Behavior Sequences: Evidence from a Micro-
finance Context**

Rishabh Mehrotra, Prasanta Bhattacharya, Tianhui Tan and Tuan Phan
ICIS 2017

Hey Cortana! Exploring the use cases of a Desktop based Digital Assistant

Rishabh Mehrotra, Ahmed Hassan Awadallah, Ahmed El Kholly and Imed Zitouni
CAIR 2017

**Characterizing and Predicting Supply-side Engagement on Crowd-contributed Video
Sharing Platforms**

Rishabh Mehrotra and Prasanta Bhattacharya
ICTIR 2017

Extracting & Leveraging User Interaction Sequences for Search Satisfaction Prediction

Rishabh Mehrotra, Imed Zitouni, Ahmed Hassan Awadallah and Ahmed El Kholly
SIGIR 2017

**Extracting Hierarchies of Search Tasks & Subtasks via a Bayesian Nonparametric Ap-
proach**

Rishabh Mehrotra and Emine Yilmaz
SIGIR 2017

Auditing Search Engines for Differential Performance Across Demographics

Rishabh Mehrotra, Ashton Anderson, Fernando Diaz, Amit Sharma, Hanna Wallach and Emine
Yilmaz
WWW 2017

Identifying User Sessions in Interactions with Intelligent Assistants

Rishabh Mehrotra, Imed Zitouni, Ahmed Hassan Awadallah, Milad Shokouhi and Ahmed El Kholly
WWW 2017 Posters

Query Log Mining for Inferring User Tasks and Needs

Rishabh Mehrotra, Emine Yilmaz
ECML 2016

Uncovering Task Based Behavioral Heterogeneities in Online Search Behavior

Rishabh Mehrotra, Prasanta Bhattacharya, Emine Yilmaz
SIGIR 2016

Deconstructing Complex Search Tasks

Rishabh Mehrotra, Prasanta Bhattacharya, Emine Yilmaz
NAACL 2016

Characterizing Users Multi-Tasking Behavior in Web Search

R. Mehrotra, P. Bhattacharya, E. Yilmaz
CHIIR 2016

The Information Network: Exploiting Causal Dependencies in Online Information Seeking

P. Bhattacharya, R. Mehrotra
CHIIR 2016

Terms, Topics & Tasks: Enhanced User Modelling for Better Personalization

Rishabh Mehrotra, Emine Yilmaz
ICTIR 2015

Representative & Informative Query Selection for Learning to Rank using Submodular Functions

Rishabh Mehrotra, Emine Yilmaz
SIGIR 2015

Modeling the Evolution of User-generated Content on a Large Video Sharing Platform

R. Mehrotra, P. Bhattacharya
WWW 2015 Posters

Towards Hierarchies of Search Tasks & Subtasks

R. Mehrotra, E. Yilmaz
WWW 2015 Posters

User Modelling for Personalization: Terms, Tasks & Beyond

R. Mehrotra
WSDM 2015

A Tensor Based Approach for Coupling Search Tasks and Topical Interests for User Modelling

R. Mehrotra, E. Yilmaz
HIA 2015

Task-Based User Modeling for Personalization via Probabilistic Matrix Factorization

R. Mehrotra, E. Yilmaz, M. Verma
RecSys 2014 Posters

Improving LDA topic models for microblogs via automatic tweet labeling and pooling

R. Mehrotra, S. Sanner, W. Buntine, L. Xie
SIGIR 2013

It takes two to tango: Coupled Dictionary Learning for Cross-Lingual Information Retrieval

R. Mehrotra, D. Chu, S.A. Haider, I. Kakadiaris

NIPS 2012 Workshop on Analysis Operator Learning vs. Dictionary Learning.

Dictionary Based Sparse Representation for Domain Adaptation

R. Mehrotra, R. Agrawal, S.A. Haider
CIKM 2012

Corporate News Classification and Valence Prediction: A Supervised Approach

S.A. Haider, R. Mehrotra
ACL HLT 2011 WASSA

Neural Self-Organization based Rectilinear Steiner Minimal Tree Generation in 3 Dimensions

R. Agrawal, R. Mehrotra, A.S. Mandal
ICMS 2011

Sparsity & Structured Sparsity for Learning Coupled Representations from Multi-View Data. Rishabh Mehrotra Thesis, University of Houston/BITS Pilani, December 2012.

INVITED TALKS

Multi-objective Contextual Bandits for Marketplace Recommendations at London Machine Learning Meetup, Dec 2018.

Learning from User Interactions at Open Data Science Seminar, London, Aug 2018.

Getting Started with Research at BITS at Alumni Research Tasks, BITS Pilani, Jan 2018.

Deep sequential models for Conversational Agents at PyData Delhi, Sept 2017.

Auditing Search Engines at K4All Workshop on Online Content Delivery, London, UK (June 2017)

User Interaction Sequences for Satisfaction Prediction, Microsoft Bing, Bellevue (Sept'16)

Search Tasks, Proactive Search & Digital Assistants, Machine Learning Meetup, Gurgaon (June'16)

Auditing Search Engines for Demographic Bias, Microsoft Research, New York (June'16)

Cross Domain News Personalization, Research Seminar, Microsoft Research, Redmond, US (Sept'15)

Counterfactual Estimation of Online Metrics, Research Talk, Microsoft Bing, London, UK (June'15)

Task Based User Modeling, Invited Research Talk, Lumi Inc., London, UK (Dec'14)

Query Selection for Learning to Rank, Reading Group talk at Microsoft Research Cambridge, UK.

Adaptive Learning, Tech Talks, Knolskape Solutions Pvt Ltd, Bangalore, May13.

Learning with Structured Sparsity, Academic Research Seminar, University of Houston, USA, Nov12.

Topic Modeling for Noisy Content, Friday Seminar Series, University of Houston, USA, Sept12.

TEACHING &
SUPERVISORY
ACTIVITIES

Teaching Assistant for Courses (UCL)

- Web Economics (2016)
- Robotics Programming (2016)
- Information Retrieval & Data Mining (2015)

Supervision of Student Projects (UCL)

- Min Ong, Master's Thesis, *Diversity aware ranking of users*
- Jay Zheng, Master's Thesis, *Evaluation Metrics for Product Recommendations*
- Mingming Fan, Master's Thesis, *Inferring Causal Impact of Bike Sharing Systems*

- Wenhao Shen, Master's Thesis, *High Volume Financial Repository*
- Asif Seth, Master's Thesis, *Time Series Modelling for Flying Binary*
- Lingyun Shen, Master's Thesis, *Optimal Pricing Information*

INTERNS
SUPERVISED

- Christian Hansen (3rd yr PhD, University of Copenhagen)
Topic: *Diversity & Reinforcement Learning for Sequential RecSys*
- Antonia Saravanou (3rd yr PhD, University of Athens)
Topic: *Graph based representation learning*
- Niannan Xue (3rd yr PhD, Imperial College London)
Topic: *Multi-objective Contextual Bandits*
- Paolo Dragone (3rd yr PhD, University di Trento)
Topic: *Distribution aware reward signals for Bandit Algorithms*
- Kevin Roitero (3rd yr PhD, University of Udine)
Topic: *Cross-training bandit models across markets*
- Sebastin Santy (4th yr undergrad, BITS Pilani)
Topic: *Dynamic Ontology Construction via Bayesian Nonparametric Models*