

ADIT KRISHNAN

201 N Goodwin Ave, Urbana IL | 217-417-8619 | aditk2@illinois.edu | <https://aditk2.web.engr.illinois.edu/>

EDUCATION

- **Ph.D. in Computer Science**, University of Illinois at Urbana-Champaign (**UIUC**), Aug 2016- May 2021 exp.
Thesis: Sparsity-Aware Neural Models for User Behavior Modeling, Personalized Search and Recommendation
- **Dual Degree (Bachelors, Masters) in Computer Science**, Indian Institute of Technology (IIT) Madras, 2011-16 **GPA: 3.86 (Top 5%)**
Thesis: Leveraging Semantic Resources in Diversified Query Expansion

RESEARCH EXPERIENCE

University of Illinois, Urbana-Champaign

Research Assistant

Dept of CS

Aug 2016 to present

Expertise: Developing and scaling deep learning methods in a wide range of recommendation, graph mining, information retrieval, NLP and behavior modeling applications with sparse and skewed real-world data. My research applies to popular deep learned models, e.g., graph convolution networks and neural collaborative filtering, and generalizes across data modalities and applications.

- **Cross-Domain Transferable Neural Recommendations:** Developed a highly-scalable one-to-many cross-domain recommendation model by extracting and adapting neural contextual invariants with Visa's transaction data. (*Published at SIGIR 2020*)
- **Multi-Task Knowledge Graph Embeddings:** Inference of stochastic associations in a massive financial knowledge graph by leveraging pre-trained prediction models to inform node embeddings. (*Upcoming Webconf-2021 Submission*)
- **Graph Neural Nets:** Representing social collaboration via Graph Neural Nets, Motif-based Graph Neural Nets, Understanding Diffusion, Multi-Relational Content Ranking via Graph Neural Nets. (*Publications at Webconf 2020, WSDM 2020, ICDM 2020*)
- **Skew and Sparsity-Aware Generative Models:** Adaptive generative model to profile sparse and skewed user behavioral data. (*Published at CIKM 2018*)
- **Adversarial Behavior Models:** Adversarial learning framework to integrate and trade-off diverse user data modalities towards supervised or unsupervised representations. (*Publications at CIKM 2018, 2019*)

Visa Research, Palo Alto CA

Research Intern

May to Aug 2019, May to Jul 2020

- Led two primary projects focused on inferring and densifying the financial knowledge graphs with neural prediction models, and training transferrable cross-domain neural recommendation models with large transaction histories
- These projects led to multiple patent submissions, a research publication at SIGIR 2020, and an upcoming research submission

Electronic Arts, Redwood Shores CA

Research Intern

May to Aug 2018

- Built a reinforcement-learned player imitation model for a collaborative game with very limited in-game feedback

IBM Research, Bengaluru, India

Research Intern

May to Aug 2015

- Developed models to leverage semantic resources such as knowledge graphs and pre-trained word embeddings for diversified query expansion on textual search engines
- This project led to a conference publication and a journal publication

Adobe Research, Bengaluru, India

Research Intern

May to Aug 2014

- Built temporal profiles of user activity across multiple advertising channels
- This project led to two patent submissions and a conference publication

SKILLS

Programming	Python, C/C++, Java, Matlab
Machine Learning	TensorFlow, PyTorch, SciPy, Weka, NLTK
Misc	Bash, Git, Azure/AWS, Pandas, Seaborn Data Analytics, SQL, Latex

AWARDS

2019	Received the Amazon Research Award for our proposal titled "Towards Robust and Scalable Neural Recommendations in the Presence of Temporal Sparsity and User Preference Skew (jointly authored with my advisor, Hari Sundaram)
Sep. 2019	ACM SIGIR Student Travel Grant for CIKM-2019
Oct. 2018	National Science Foundation (NSF) Travel Grant for CIKM-2018, Student Awardee
fall 2018	Conference Travel Grant , Dept of Computer Science, University of Illinois at Urbana-Champaign
Nov. 2016	Best Paper Award , 17th International Conference on Web Information Systems Engineering (WISE)
Aug. 2016	Brian Totty Graduate Fellowship in Computer Science, University of Illinois at Urbana-Champaign
2011, 2010	Top-1% Award , National Standard Examination in Physics, NSEP-India
2010	Top-1% Award , Science Olympiad Foundation (SOF)

PUBLICATIONS

- **(SIGIR-2020) Adit Krishnan**, Mahashweta Das, Mangesh Bendre, Hao Yang, Hari Sundaram. Transfer Learning via Contextual Invariants for One-to-Many Cross-Domain Recommendation. *43rd International ACM SIGIR Conference on Research and Development in Information Retrieval, Xi'an, China. Jul 20.*
- **[In Review]** Multi-Task Knowledge Graph Embeddings via Counterfactual Reasoning
- **[In Review]** Contrastive Graph Convolution to Rank User-Generated Content
- **(ICDM-2020)** Aravind Sankar, Junting Wang, **Adit Krishnan**, Hari Sundaram. Beyond Localized Graph Neural Networks: An Attributed Motif Regularization Framework. *20th IEEE International Conference on Data Mining, Sorrento, Italy. Nov 20.*
- **(WebConf 2020)** Yuxin Xiao, **Adit Krishnan**, Hari Sundaram. Discovering Strategic Behaviors for Collaborative Content-Production in Social Networks. *The WebConf 2020, Taipei. Apr 20.*
- **(WSDM-2020)** Aravind Sankar, Xinyang Zhang, **Adit Krishnan** and Jiawei Han. Variational Auto-Encoders to Integrate Homophily and Influence in Diffusion Prediction. *13th ACM International Conference on Web Search and Data Mining, Texas, USA. Feb 20.*
- **(CIKM-2019)** **Adit Krishnan**, Hari Cheruvu, Cheng, Hari Sundaram. A Modular Adversarial Approach to Social Recommendation. *28th ACM International Conference on Information and Knowledge Management, Beijing, China. Nov 19.*
- **(CIKM-2018)** **Adit Krishnan**, Ashish Sharma, Aravind Sankar, Hari Sundaram. An Adversarial Approach to Improve Long-Tail Performance in Neural Collaborative Filtering. *27th ACM International Conference on Information and Knowledge Management, Turin, Italy. Oct 18.*
- **(CIKM-2018)** **Adit Krishnan**, Ashish Sharma, Hari Sundaram. Latent Representations of Online User Behavior in the Presence of Skew and Sparsity. *27th ACM International Conference on Information and Knowledge Management, Turin, Italy. Oct 18.*
- **(IJCNN-2019)** Aravind Sankar, **Adit Krishnan**, Zongjian He, Carl Yang. RASE: Relationship Aware Social Embeddings. *The 2019 International Joint Conference on Neural Networks, Budapest, Hungary. Jul 19.*
- **(CIKM-2017)** **Adit Krishnan**, Aravind Sankar, Shi Zhi, Jiawei Han. Unsupervised Concept Categorization and Extraction from Scientific Document Titles. *26th ACM International Conference on Information and Knowledge Management, Singapore. Nov 17.*
- *World Wide Web (WWW) Journal, Springer US, 2017.* **Adit Krishnan**, Deepak P, Sayan Ranu, Sameep Mehta. Leveraging Semantic Resources in Diversified Query Expansion.
- **(WISE-16)** **Adit Krishnan**, Deepak P, Sayan Ranu, Sameep Mehta. Select, Link and Rank: Diversified Query Expansion and Entity Ranking using Wikipedia. *17th International Conference on Web Information Systems Engineering, Shanghai, China. Nov 16. [Best Paper Award]*
- **(WISE-15)** Sinha, Mehta, Bohra, **Krishnan**¹. Improving Marketing Interactions by Mining Sequences. *16th International Conference on Web Information Systems Engineering, Miami, Florida. Oct 15.*

PATENT SUBMISSIONS

- **Adit Krishnan**, Mahashweta Das, Mangesh Bendre, Fei Wang, Hao Yang. Method, System and Computer Program Product for Knowledge Graph Based Multi-task Learning. 2020.
- **Adit Krishnan**, Mahashweta Das, Mangesh Bendre, Hao Yang. [US Patent App No.17-070,795] Meta-Transfer Learning via Contextual Invariants for Cross-Domain Recommendation. 2019.
- Sinha, Mehta, Bohra, **Krishnan**¹. [US Patent granted, US20160148248A1] Multi-Channel Marketing Campaigns.
- Sinha, Mehta, Bohra, **Krishnan**¹. [US Patent granted, US20160148271A1] Personalized Marketing Based on Sequence Mining.

RESEARCH TALKS & PRESENTATIONS

- **Jul. 2020, SIGIR 2020, Virtual Presentation** : Contextual Invariants for Cross-Domain Recommendation.
- **Jun. 2020, Visa Research Inc., Palo Alto, CA** : A Modular Adversarial Framework for Social Recommendation.
- **Feb. 2020, WSDM-2020, Houston, Texas USA** : Integrating Influence and Homophily in Information Diffusion Prediction.
- **Nov. 2019, CIKM-2019, Beijing, China** : A Modular Adversarial Framework for Social Recommendation.
- **Jun. 2019, Visa Research Inc., Palo Alto, CA** : Cross-Domain Recommendation with Contextual Invariants.
- **Oct. 2018, CIKM-2018, Turin, Italy** : Adversarial Strategies for Sparsity-aware Neural Recommendation.
- **Oct. 2018, CIKM-2018, Turin, Italy** : User Behavior Embeddings in the Presence of Skew and Sparsity.
- **Aug. 2018, Electronic Arts Inc., Redwood Shores, CA**: Strategic Planning with Self-Attention Networks.
- **Nov. 2017, CIKM-2017, Singapore**: A Generalizable Entity Extraction Method for Scientific Documents.
- **2016, WISE-2016, Shanghai, China**: Diversified Query Expansion with Entity Networks. **[Best Paper Award]**

PROFESSIONAL SERVICE

- Session Chair for Deep Neural Networks: **CIKM-2019**
- Conference Reviewer: **WSDM-2020, CIKM-2019, Webconf-2020/21, ICDM-2019, IJCAI-2020, IDCM-2020**
- Journal Reviewer: IEEE Trans on Knowledge and Data Eng (**IEEE TKDE**), IEEE Trans on Big Data (**IEEE TBD**), **IEEE Access** ACM Trans on Intelligent Systems (**ACM TIST**), ACM Computing Surveys (**ACM CSUR**), ACM Trans on Info Systems (**ACM TOIS**) **PLOS One**, Springer Machine Learning Journal (**Springer MACH**)

REFERENCES

Available upon request.

¹Equal Contribution