Aniket Anand Deshmukh

CONTACT INFORMATION

Google Scholar: shorturl.at/cmxJS
Email: aniketde15@gmail.com
Web: https://aniketde.github.io/
Phone: (734) 277-3529

EDUCATION

University of Michigan (UMich), Ann Arbor, MI USA — CGPA: 4.0/4.0
Ph.D., Electrical and Computer Engineering — *Aug'13 - Jan'19*

- Ph.D. Research Projects: Domain Generalization [1], Multitask Learning for Contextual Bandits [2], Simple Regret Minimization for Contextual Bandits [3]
- Graduate Student Instructor: EECS 545 Machine Learning (Fall 2016, Fall 2018)

Indian Institute of Technology Hyderabad (IIT-H), India — CGPA: 8.63/10.0
Bachelor of Technology with Honors, Electrical Engineering — *Jul'09 - Jul'13*

PROFESSIONAL EXPERIENCE

Tech Lead/ML Scientist, AWS AI Labs, Amazon, Santa Clara, CA, USA — *Jan'23 - Present*

- Code Review using Large Language Models (LLMs): Led the development of Amazon Q's code review tool achieving greater than 85% accuracy in detecting and remediating code issues. Enhanced developer productivity and quality assurance for enterprise-grade applications. Currently working on LLM post-training techniques to finetune LLM to improve performance of code review.
- LLM pre-training for Code Generation: Advanced model-based data quality techniques for pre-training large-scale LLMs, focusing on 10-20B parameter models, to drive improvements in code generation performance and robustness.
- Personalized RAG Models: Led the design and implementation of personalized RAG models for an AWS service (Amazon Q) with a team of 10+ members. Improved personalization for approximately 10% of queries, increasing the acceptability metric from 45% to 65% in targeted use cases.
- Chat for Data Preparation (AWS Low-Code/No-Code Solutions): Developed and enhanced the "Chat for Data Prep" feature in AWS Sagemaker Canvas, enabling intuitive chat-based data querying, manipulation, and visualization powered by LLMs. Designed automated query recommendations and built a testing framework to evaluate the pipeline.
- Mentor and Hiring Lead (2023, 2024): Oversaw and streamlined the intern recruitment process, including candidate outreach, interviews, and project allocations. Shortlisted over 15 candidates from hundreds of applications and mentored selected interns to achieve impactful project outcomes with top publications at NeurIPS [7, 8, 9].

Senior Applied Scientist, Microsoft AI & Research, Mountain View, CA, USA — *Mar'19 - Jan'23*

- Multi Media Ads (Retrieve images from general purpose corpus for Ad text): Developed an image-text multimodal model, increasing click-through rate (CTR) by 1.5% through A/B testing and outperforming OpenAI's CLIP model by 9.4% in internal evaluations. Coordinated team efforts across meetings, documentation, GPU resource allocation, and evaluation pipeline setup.
- Image attribute classification for product shopping: Designed and deployed a curriculum learning-based image classification model on Microsoft Ads shopping platform, generating $2M daily revenue. Mentored an intern to develop and deploy a clustering method, reducing image labeling costs and improving efficiency; findings were published in ECCV 2020 [4] and IJCNN 2021 [5].
- Smart Campaigns (AI powered feature to help small businesses manage their advertising): Developed a representation learning model to assess keyword-query similarity from click data, enabling over 10,000 advertisers to identify relevant keywords for their ads and improve targeting precision.

Graduate Student Research Assistant, UMich, Ann Arbor, MI, USA — *Aug'13 - Jan'19*

- Contextual Bandits/Reinforcement Learning: Modeled personalized recommendation problems in a multi-task learning framework for contextual bandits [2], proving regret bounds. Developed an adaptive sensor selection framework for interplanetary spacecraft using a novel simple regret minimization technique, achieving $> 25\%$ improvement over cumulative regret-based algorithms. The project won multiple awards, including Best Paper at the ICML 2019 workshop on "Exploration in RL" [3].
- Domain Generalization (Out of Distribution Learning): Reduced the time complexity of kernel-based domain generalization algorithm from $O(n^2)$ to $O(n)$ using kernel approximation technique and proved the upper bound on the approximation error [1].

Skills

Languages	Python, SQL, Latex, HTML
Tools	PyTorch, Keras, TensorFlow, Scikit-learn, Pandas, Matlab, Azure ML, AWS, etc

Academic Service

- Outstanding Reviewer award at NeurIPS 2021, AISTATS 2022 and NeurIPS 2023 *Jun'21 - current*
- Reviewer, NeurIPS, ICML, ICLR, CVPR, AISTATS, JMLR, UAI, AAAI, etc *Jan'18 - current*
- Co-chair, TheWebConf 2023 Decision Making for IR and Recommender Systems *Oct'22 - Apr'23*
- Co-chair, ICLR 2023 Domain Generalization Workshop *Oct'22 - Apr'23*

Selected Publications

1. Subhojyoti Mukherjee, Ge Liu, Aniket Deshmukh, Anusha Lalitha, Yifei Ma, and Branislav Kveton. Experimental design for active transductive inference in large language models. *ICML submission*, 2024
2. Subhojyoti Mukherjee, Anusha Lalitha, Kousha Kalantari, Aniket Deshmukh, Ge Liu, Yifei Ma, and Branislav Kveton. Optimal design for k-way human feedback. *ICML submission*, 2024
3. Aniket Anand Deshmukh, Jayanth Reddy Regatti, Eren Manavoglu, and Urun Dogan. Representation learning for clustering via building consensus. *arXiv preprint arXiv:2105.01289. Accepted at Springer Machine Learning Journal*, 2022
4. Jayanth Reddy Regatti, Aniket Anand Deshmukh, Eren Manavoglu, and Urun Dogan. Consensus clustering with unsupervised representation learning. In *2021 International Joint Conference on Neural Networks (IJCNN)*, pages 1–9. IEEE, 2021
5. Gilles Blanchard, Aniket Anand Deshmukh, Urun Dogan, Gyemin Lee, and Clayton Scott. Domain generalization by marginal transfer learning. *Journal of Machine Learning Research*, 22(2):1–55, 2021
6. Jayanth Reddy Regatti, Aniket Anand Deshmukh, Frank Cheng, Young Hun Jung, Abhishek Gupta, and Urun Dogan. Offline rl with resource constrained online deployment. *arXiv preprint arXiv:2110.03165*, 2021
7. Urun Dogan, Aniket Anand Deshmukh, Marcin Machura, and Christian Igel. Label-similarity curriculum learning. In *European Conference on Computer Vision*, pages 174–190. Springer, 2020
8. Aniket Anand Deshmukh, Srinagesh Sharma, James W Cutler, Mark Moldwin, and Clayton Scott. Simple regret minimization for contextual bandits. In *Exploration in RL, ICML 2019 workshop arXiv preprint arXiv:1810.07371*, 2018
9. Aniket Anand Deshmukh, Urun Dogan, and Clay Scott. Multi-task learning for contextual bandits. In *Advances in Neural Information Processing Systems*, pages 4848–4856, 2017