Ashutosh Kakadiya
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Experience

- **Amazon India** — Bangalore, India
  Applied Scientist in Amazon Advertising — *June.2021 – present*
  - **Algorithmic ad moderation for high volume and sponsored ad programs**: Built ML models as decision making system in Ads moderation to tackle large scale of ads for various Ad programs and marketplaces. **Achieved +20-25% gain in automated moderation using ML based models.**.
    - Meta-classification of ads as defective and non-defective based on ad, advertiser attributes and flagging of defect signals
    - Large-scale data wrangling, feature engineering and model training. Scalable model deployment and maintenance in production
    - **End to end ownership of ML pipeline**; Periodically model improvement, deployment and post monitoring.
    - Designed a service to automate periodic ML model training to tackle data drift and new feature inclusion. Reduced retraining cycle period from **20 days to 12 days**.
    - Built a Reinforcement learning-based POC for dynamic routing of ads to different moderation channels, having varying accuracy and throughput under capacity constraints.
  - **Bad Live Ads Suppression and Bad Actor Identification**: Built similarity and ranking models to catch non compliant live Ad defects to enhance customer experience. **Models contribution is 54% of bad impressions SVP goal. Featured in annual all hands meet.**
    - Understood a business problem and converted into a formal ML problem. Proposed short term and long term approaches for solving in iterative way with continuous impact.
    - Built **similarity model** based on nearest neighbour approach with **68% rejection precision** to catch similar actors given sample input. Built **ranking model** based on pre-defined policy with **72% rejection precision**.
    - **Reduced TAT time** for moderation and increase capacity of moderation by 250 in a month via automating data analysis processes which acts as additional knowledge for moderation team.
    - Designed a GNN based approach as a proactive identification of similar bad actors.

Education

- **Indian Institute of Technology, Madras** — Chennai, India
  Master of Science by Research (Computer Science and Engineering); GPA: 7.81/10 — *July. 2018 – May. 2021*
  Advisors: Prof. Balaraman Ravindran, IIT Madras & Prof. Sriraam Natarajan, UT Dallas

  Thesis title: Relational Boosted Bandits in the real-world user interactions (accepted in AAAI'21).

  Coursework: Reinforcement Learning, Machine Learning, Deep Learning, Linear Algebra & Random Processes, Data structures & Algorithm

- **Ahmedabad University** — Ahmedabad, India
  Bachelor of Technology in Information and Communication Technology; GPA: 3.41/4.0 — *Aug. 2014 – June. 2018*
  Advisors: Prof. Ratnik Gandhi & Prof. Sanjay Chaudhary

Internships & Assistantships

- **Department of Computer Science and Engineering, IIT Madras** — Chennai, India
  Teaching Assistant — *Aug 2018 - July 2020*
  - **Courses**: Reinforcement Learning, Convex Optimization, Artificial Intelligence, Intro. to Programming
  - **Responsibility**: Creating and evaluating tutorials, programming assignments, taking doubt sessions and exams for a class of about 80 undergraduates and postgraduates.
- **HireValley Infosolutions (ezDI)** — Ahmedabad, India
  R&D ML Intern , Recommendation letter from founder — *May 2017 - April 2018*
  - **Multi-tenant SaaS Platform**: Part of a team of four responsible for building a major part of a company. Built a recommendation engine to suggest jobs for candidates and a candidate recommender system for recruiters with both recommendation tasks running on the same source code.
  - **Micro Service Architecture**: Built micro-services for each feature scoring algorithm maintained. The MSA is implemented using Amazon Web Services(AWS).
  - **Hiring Trend Analysis**: Performed cutting-edge research on modeling the early stages of recruitment. An average HR person gets less than 6 seconds to skim through a candidate's resume. Built a system to model an average HR using multinomial regression based on their past recruits of a certain company for a particular profession.

Publications

- **Kakadiya, A.**, Natarajan S., Ravindran, B.. Relational Boosted Bandits. AAAI 2021.
- **Kakadiya, A.**, Natarajan S., Ravindran, B.. Relational Contextual Bandits. In workshop REVEAL 2020, ACM recommendations systems.
- **Kakadiya, A.**, Derasari, R., Mehta, M. , Patel, S., Gandhi, R., Chaudhary, S., and Goswami, R., (2019). A Service-Oriented Architecture for Human Capital Management System. In 2019 Annual IEEE Systems Conference (SysCon) Proceedings . IEEE
- Patel, S., **Kakadiya, A.**, Mehta, M., Derasari, R., Patel, R., and Gandhi, R. (2018). "Correlated Data Generation Using GAN and its Application for Skill Recommendation" in 2nd Workshop on DSHCM collocated with ECML-PKDD'18

Master's Thesis

Title: Relational Boosted Bandits in real-world user interactions

- Proposed a first contextual bandit algorithm, Relational Boosted Bandits(Rb2) for online learning in relational domain
- Incorporated gradient boosted relational trees as a base learner and softmax exploration for the exploration - exploitation trade-off
- New parametric-free sampling algorithm that is suitable for online relational learning
- Empirically demonstrated the effectiveness and interpretability of RB2 with other benchmark algorithms on the cumulative regret evaluation metric on tasks such as link prediction, relational classification, and recommendation

Selected Projects

- **Model Based Reinforcement Learning with Graph Interaction Networks(Feb 2019 - September 2019)**:
  Model-Based Reinforcement Learning is centered at making agents build a sufficiently good model of the environment and then plan on the model.Proposed novel Model-based RL algorithm that incorporate the richer information of interactions within different parts of the agent and environment using graphs interaction networks. Project report
- **News Article Recommendation Algorithm (April 2019)**:
  Proposed a novel recommendation algorithm based on contextual bandit and efficient heuristics.The project was taken as self-study on recommendation algorithms. Used LinUCB as oracle learner and applied ML techniques for building filters to classify relevant users and contents.The CTR improvement of 9% over standard baseline.

Programming Skills

- **Languages**: Python,Java, SQL, C, C++, HTML, MATLAB
- **Tools/Technologies**: PyTorch, XGboost, AWS Sagemaker, ASML, Git, Latex, Openai baselines, Flask, Pandas, Numpy, Scipy, scikit-learn

Professional Activities

- Lab Instructor, Deep Reinforcement Learning Crash Course Workshop for DRDO scientists at IITM Research Park, December'19
- Lab Instructor and Organizer, Learning in Data Science: Models, Algorithms & Tools Summer School; at Ahmedabad University, July'17

Achievements & Honours

- Selected for Google AI Research Summer School, June'20
- Titled Distinguished Alumni by Dean of SEAS, Ahmedabad University, 2020
- Secured All India Rank 1349 among 107893 candidates in GATE (computer science), 2018
- Secure 25th rank in all over India in 24 hour algorithmic programming competition held by IEEE, October'16
- Selected for Indian Oil Corporation Student Scholarship for Academic excellence. 2014