KULIN SHAH

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EDUCATION

International Institute of Information Technology, Hyderabad *August 2015 - July 2019*
B. Tech (Honours) in Computer Science and Engineering Cum. GPA: 9.01/10

PUBLICATIONS

1. **Kulin Shah**, Naresh Manwani. "Sparse Reject Option Classifier using Successive Linear Programming" Accepted for **oral** presentation in **AAAI conference on Artificial Intelligence, 2019**.
2. **Kulin Shah**, Naresh Manwani. "Online Active Learning for Reject Option Classifier". Accepted for **oral** presentation in **AAAI conference on Artificial Intelligence, 2020**..
3. **Kulin Shah**, PS Sastry, Naresh Manwani. "PLUME: Polyhedral Learning Using Mixture of Experts" arXiv preprint arXiv:1904.09948 .
4. Amit Deshpande, Chiranjib Bhattacharyya, **Kulin Shah**, Pooja Gupta. "Fair Adaptation of Threshold Policies" . Submitted in International Conference on Machine Learning, 2020.
5. B. Syed, V. Indurthi, **Kulin Shah**, M. Gupta and V. Varma "Ingredients for Happiness: Modeling constructs via semi-supervised content driven inductive transfer", **AAAI-19 Workshop** on Affective Content Analysis, AFFCON-19. (**Runner-up** for CL-Aff shared task.)

WORK EXPERIENCE

Research Fellow Aug 2019 - Current
Microsoft Research Lab, Bangalore

· Mentor: Dr. Amit Deshpande and Dr. Navin Goyal
· Working on problems related to generative models (especially Normalizing flows, GANs).

Research Intern May 2019 - July 2019
Microsoft Research Lab, Bangalore

· Mentor: Dr. Amit Deshpande
· Worked on problems related to fairness in machine learning.

Research Intern May 2018 - July 2018
Indian Institute of Science, Bangalore

· Mentor: Prof. PS Sastry
· Conducted an experimental study to understand importance of various parts of Capsule Network and compared its performance with traditional CNNs..

Research Student May 2017 - May 2019
Machine Learning Lab, IIIT Hyderabad

· Mentor: Dr. Naresh Manwani
· Worked on multiple research problems of reject option classification, non-convex optimization, multi-armed bandit, reinforcement learning, deep learning, etc.

Teaching Assistant
IIIT Hyderabad

· Designed & graded assignments, evaluated exams, conducted tutorials and mentored research projects of Linear Algebra (Spring'19), Statistical Methods in AI (Spring'18), Algorithms (Monsoon'17)

Software Developer August 2016 - December 2016
Gibbr, Hyderabad

· Developed a prototype of a software for creating panoramic images and 360 degree photo-spheres from mobile or DSLR images. Compared performance of generated images over various mobiles and DSLRs.

HONORS AND ACHIEVEMENTS

- **Subreviewer** of IJCAI 2019, IJCNN 2019, ACM IKDD CoDS-COMAD 2019 conference
- Awarded **Google**, **Microsoft Research** and **AAAI Student Scholarship** travel grant to attend **AAAI** 2019.
- Awarded **Research Award** for exceptional research work at IIIT Hyderabad.
- Received perfect **10 GPA** in Spring 2018 semester.
- Awarded **Dean's List** award for excellent academic performance.
- Achieved **34 rank** in India in online round of ACM ICPC, 2018.
- Achieved **53 rank** in India in Amritapuri regionals of ACM ICPC, 2017.

SELECTED RESEARCH/COURSE PROJECTS

Consistent Bellman Operator
Studied inconsistency problem in traditional Bellman operator and new optimality-preserving consistent Bellman operator. Implemented new Bellman operator in Deep Q-Network in PyTorch. Compared its performance with traditional Bellman operator on Atari-2600 games.

Multiclass classification in partial feedback setting
Surveyed various algorithms using Multi-Armed Bandit to learn multiclass classification model in partial feedback setting i.e. the feedback is prediction made by the algorithm was correct or not. Analysed properties (e.g. mistake bounds) of the algorithms.

Understanding Capsule Network
Surveyed recent advances in new type of neural network - Capsule Network. Implemented the Capsule Network and checked the performance in several dataset. Experimented with Capsule Network to understand the dynamics of Capsule Network.

AI Bot for Ultimate Tic-Tac-Toe
Developed an agent for ultimate tic-tac-toe game using Monte-Carlo Tree Search (MCTS) and Upper Confidential Bound (UCB) algorithms. Implemented the algorithm in python and compared its performance with other search algorithms.

Universal Style Transfer
Surveyed recent style transfer techniques and implemented universal style transfer in content image from style image via feature transforms using Coloring Transform, Whitening Transform and encoder-decoder. Evaluated the performance of the architecture on real-life content and style images.

TECHNICAL SKILLS

Programming Languages	Python, Matlab, C, C++, Bash, Java
Libraries & Tools	TensorFlow, PyTorch, Keras, Scikit-learn, Git, Linux, Latex

RELEVANT COURSES

Artificial Intelligence	Machine Learning	Advance Machine Learning
Optimization Methods	Digital Signal Applications	Computer Vision
Graphics	Game Theory	Data Structures & Algorithms
Linear & Abstract Algebra	Functional Analysis	Probability & Complex Numbers