

LALIT BHAGAT

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EDUCATION

University of California - Los Angeles (UCLA)

Dec 2023

Master of Science in Computer Science

GPA: 4.0/4.0

- Awarded Graduate Council Diversity Fellowship

Jaypee Institute of Information Technology (JIIT)

May 2021

B. Tech in Computer Science and Engineering with Honours

GPA: 8.7/10

RESEARCH INTERESTS

GANs, Human-AI interaction, Adversarial Robustness, AI for Climate Change, Computer Vision, Cognitive Psychology

RESEARCH EXPERIENCE

Zhou Lab at UCLA

July 2023 – Dec 2023

Research Assistant | Advisor: Bolei Zhou

Los Angeles, CA

- Improved spatial steerability of GANs without searching for steerable directions in the latent space or requiring extra annotation
- Developed a user interface enabling user to edit the output image by adjusting the scene layout, moving, or removing objects
- Integrated DragGAN to enable fine-grained manipulation efficiently, supporting a step-by-step coarse-to-fine editing approach

UCLA Computational Machine Learning Lab

Oct 2022 – June 2023

Masters Thesis | Advisor: Cho-Jui Hsieh

Los Angeles, CA

- Developed a Parameter-free Adversarial Attack via Learned Optimizer using meta learning
- Achieved better l_{∞} norm 8/255 attack accuracy than PGD when tested on robust models trained on MNIST dataset

NeWS Lab, Indian Institute of Technology Hyderabad

Jun 2020 – Aug 2021

Research Intern | Advisor: Antony Franklin

Hyderabad, India

- Designed a Multi-neural network based tiled 360° video caching solution with Mobile Edge Computing
- Implemented asynchronous actor-critic (A3C), CNN, LSTM, LFU and LRU algorithms for caching of tiles in 360° video
- Evaluated proposed framework through simulations with real-world head-movement traces, enhanced user experience
- Improved cache hit rate by 10% and reduced end-to-end latency along with back-haul usage by at least 35%

Jaypee Institute of Information Technology

Sep 2019 - May 2020

Research Assistant | Advisor: Dinesh C. S. Bisht

Noida, India

- Developed a Hybrid Adaptive Time Variant Fuzzy Time Series model with Genetic Algorithm
- Implemented Genetic Algorithms for selection and optimization of fuzzy intervals in Fuzzy Time Series
- Evaluated model on real-time Air Quality Index data of 2 cities, improved the RMSE by at least 2 units

INDUSTRY EXPERIENCE

Amazon Science

Jun 2022 – Sep 2022

Applied Scientist Intern

Seattle, WA

- Developed Payment Intelligent Embedding Representation (PIER) for Amazon customer data
- Implemented VAE, leading to an 83% reduction in storage costs and reducing training time by 75%
- Designed PIER to make payment data accessible to internal teams without privacy issues

Gurugram Police

Jun 2020 – Jul 2020

Cyber Security Intern

Remote

- Developed a mobile camera application to prevent the saving and sharing of inappropriate images, to curb cybercrime.
- Designed an ML model and integrated it client-side to mitigate security breaches often resulting from API calls.

TEACHING

Machine Learning, Teaching Associate, UCLA

Fall 2023

MATLAB Programming, Teaching Associate, UCLA

Summer 2023

Advanced MATLAB Programming, Teaching Associate, UCLA

Winter 2023

SQL and Basic Data Management, Teaching Assistant, UCLA

Fall 2022

MATLAB Programming, Teaching Assistant, UCLA

Spring 2022

Cognitive Psychology, Teaching Assistant, UCLA

Winter 2022

TECHNICAL SKILLS

C, C++, Python(Pytorch, Tensorflow) , MATLAB, SQL, Linux

RESEARCH PROJECTS

High-resolution weather forecasting via downscaling | *AI for Climate Change*

Fall 2022

- Proposed a novel joint training framework for weather forecasting and downscaling, which improves the accuracy and resolution of climate predictions.
- Showed that the joint framework outperforms isolated high-resolution forecasting models

SketchHTML - An interactive sketch to HTML converter | *CS 269 UCLA*

Spring 2022

- Developed an innovative "no-code" tool for creating HTML web pages from hand-drawn sketches
- Extended software to generate Web-UI images to create an enhanced dataset and achieved better performance
- Improved upon existing applications by allowing more variations in the layouts and an interactive tool for styling

Daltonism | *Minor Project | Image Processing | OpenCV*

Jan 2020 – May 2020

- Developed a mobile application for color the deficient patients, to help them perceive colors they normally can't see.
- Implemented image processing techniques for mapping of images to different color spectrum that falls in visible spectrum

Clustering of Air Objects and Trajectory Prediction | *Team Lead, Smart India Hackathon*

Jan 2020 – May 2020

- Extracted features like max velocity, max altitude, drop in altitude, etc. from 4D trajectory of air objects
- Applied K-means algorithm on extracted features for clustering of air objects - Airplane, Missile and Drop Bomb
- Achieved a R2 score of 99.5 by training separate LSTM models on each air object cluster. Airplane data set: NASA

PUBLICATIONS

Obscene Image Excluder | *App. No: 202011041018 | <https://ipindiaservices.gov.in/publicsearch>*

10/23/2020

- Indian **Patent** (published) | Name of Inventors: **Lalit Bhagat**, Nancy Sharma, Himani Bansal, Kanchan Hans

Wang, J. *, **Bhagat, L.** * Yang, C., Xu, Y., Shen, Y., Li, H., & Zhou, B. (2023). **Spatial Steerability of GANs via Self-Supervision from Discriminator**. arXiv preprint arXiv:2301.08455. Submitted IEEE Transactions on Pattern Analysis and Machine Intelligence (**TPAMI**)

Kumar, S., **Bhagat, L.**, Franklin A, A., and Jin, J., **Multi-neural network based tiled 360°video caching with Mobile Edge Computing**, Journal of Network and Computer Applications (**JNCA**), 2022, 103342, ISSN 1084-8045[**SCI IF: 7.57**]

Bhagat, L. (2023). Parameter-free Adversarial Attack via Learned Optimizer (Masters thesis, University of California, Los Angeles).

Bansal H., **Bhagat L.**, Mittal S., Tiwari A. (2021) **Image Correction and Identification of Ishihara Test Images for Color Blind Individual**. Proceedings of Second International Conference on Computing, Communications, and Cyber-Security. Lecture Notes in Networks and Systems, vol 203. Springer, Singapore. [**SCOPUS**] [**DBLP**]

Bhagat, L. et al. (2021), **Air quality management using genetic algorithm based heuristic fuzzy time series model**, The TQM Journal, Vol. ahead-of-print No. ahead-of-print. [**SCOPUS**]