Rohan Dubey

Hyderabad, India | +91-9133011177 | rohandubey262000@gmail.com | in/rohandubey

Experience

Associate Data Scientist June 2023 – Present
ZEE Entertainment *Bangalore, India*

- Developing a cohort-based subscription model for ZEE5 to optimize dynamic pricing
- Applying causal inference techniques to determine the main factors influencing user subscription at ZEE5. These projects are in progress.

Applied Scientist Intern June 2022 – Nov. 2022
Amazon *Bangalore, India*

- Engineered and designed methodologies to mitigate bias in NLU model performance across different clusters of Alexa NLU data, achieving equitable learning goals and removing language biases using cross-lingual data and data augmentation techniques.
- Monitored the NLU models of Alexa and contributed to the effective deployment of the model.

Summer Research Intern June 2020 – July 2020
Andhra Pradesh Human Resource Development Institute (APHRDI) *Bapatla, India*

- Conducted rigorous research on COVID-19 in India using qualitative and quantitative methods and analyzed trends to forecast and strategize the pandemic response.
- Contributed to evidence-based decision making and policy formulation.
- Applied machine learning tools to forecast COVID-19 trends with a modified SEIR model and visualized the results.

Research Intern May 2019 – July 2019
Indian Institute of Technology-BHU *Varansai, India*

- Conducted a simulation of a weighted cost-sharing network game in multicast routing networks.
- Utilized modified Nash equilibrium and graph and network theory to design and plan network paths for a hypothetical city, resulting in improved network routing.

Education

Birla Institute of Technology and Science Pilani, India
M.Sc in Mathematics and B.E in Electrical & Electronics Engineering *Aug. 2018 – June 2023*

Publications

Mitigating algorithmic bias in large language models through continual learning | 2023(under review), *R. Dubey, T. Kuila, P. K. Sharma, A. Dwarakanath,* 2023 Conference on Empirical Methods in Natural Language Processing - Industry Track.

Handwritten Image Detection using DCGAN with SIFT and ORB Optical Features | May 2023, *R. Dubey, I. Das,* 6th International Conference on Information Systems and Computer Networks, doi: 10.1109/ISCON57294.2023.10112139.

Coordinated load frequency control of a smart hybrid power system using the DEMA-TD3 algorithm | March 2023, *R. Loka, R. Dubey, A. M. Parimi,* Control Engineering Practice, Volume 134, doi: 10.1016/j.conengprac.2023.105480.

Maintaining the frequency of AI-based power system model using Twin Delayed DDPG(TD3) implementation | March 2022, *R. Dubey, R. Loka, A. M. Parimi,* 2nd International Conference on Power Electronics & IoT Applications in Renewable Energy and its Control (PARC), doi: 10.1109/PARC52418.2022.9726615.

Projects

Bias Mitigation for Equitable Learning | *PyTorch, and BERT* Alexa-NLU, Amazon, Bangalore, India.

- Proposed sequential fine-tuning with continual learning methods (EWC, MAS and their combinations) to reduce algorithmic bias in NLU models and evaluated the methods on MultiNLI and Alexa NLU datasets and claims to outperform existing and baseline models.
- Provided extensive reasoning for the use of continual learning as a method to tackle algorithmic bias for unbiased AI development.

Face Mask Detector | *YOLOv5, OpenCV, PyTorch, and Tkinter* Govt. of Rajasthan, India.

- Developed an AI solution with built-in GUI based on the YOLOv5 model, RetinaNet and OpenCV to detect those wearing masks or not. MAP score of 54.98.
- This program can run on multiple camera sources and store images without a mask for future identification.

Heart-rate Monitoring System | *OpenCV, Scipy, and Python* BITS, Pilani, India.

- Developed contactless pulse detection software using OpenCV and signal transformation techniques.
- Tested the software with webcam and network IP camera sources and demonstrated its usefulness for hypersensitive people and COVID-19 situation.

Object Detection using Homography Techniques | *OpenCV, Python, Numpy* BITS, Pilani, India.

- Implemented real-time object detection with SIFT, FLANN and KNN algorithms using homography and feature matching.

Research Interests

- Computer Vision
- Reinforcement Learning
- Natural Language Processing
- Generative AI
- Statistics
- Optimization
- Recommendation Systems
- Ethical AI
- Causal Inference

Coursework

- Neural Networks and Fuzzy Logic
- Graphs and Networks
- Linear Algebra
- Machine Learning
- Optimization & Operation Research
- Non-Linear Optimization
- Probability and Statistics
- Discrete Mathematics

Skills

Programming Languages: C/C++, Python, SQL, R, and MATLAB

Cloud Frameworks: GCP (Deployment and Mitigation), Kubernetes, VertexAI, Big Query, and Docker

ML Frameworks: OpenCV, Flask, Git, CUDA, TensorFlow, and PyTorch

Extracurricular Activity

National Service Scheme (NSS) | *Student Volunteer* BITS, Pilani, India.

- Contributed to social service activities such as blood donation, cleanliness drives, and awareness campaigns.

Esports Club | *Media Head* BITS, Pilani, India.

- Designed and created posters, flyers, and other media materials for the esports events and activities.

IEEE Club | *Machine Learning Lead* BITS, Pilani, India.

- Implemented various machine learning workshops and mentored and supervised junior members in developing their skills.