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Satyadwyoom Kumar

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Education

University of Delhi (NSIT) 2018 — 2022
Bachelors of Engineering (B.E.), Electronics and Communication Engineering
CVPSK Scholar (Awarded to top 10 students)
Bachelor's Thesis: *Introducing temporally consistent weather conditions in aerial-videos using LSTM & Cycle-GAN.*

Skills

Tools and Languages	Python, C++, R, Git, LaTeX, SQL, Hive, Spark, Scrapy
ML/DL Frameworks	Pytorch, Tensorflow, scikit-learn, NLTK
Familiar	Matlab, HTML, CSS
Interests	Adversarial ML, Explainability, Computer Vision, Recommendation Systems

Professional Experience

OYO Rooms **Jul 2022 — Present**
Sr. Data Scientist *Gurugram, India*
- Developed a statistical technique to dynamically set booking prices minimizing business costs by an avg. of $28000 monthly.
- Utilized the same technique to improve same property cin from 15% to 35% on OTA channels.
- Automated a RCA framework for customer escalations (Python + Presto), Saving $12000 spent for manual intervention.
- Promoted to Sr. Data Scientist position within 9 months.

Dell **Jan 2022 — Jun 2022**
Data Scientist *Bangalore, India*
- Developed an innovative method utilizing Bag of Words (BoW) representation and cosine similarity to eliminate redundant terms from web-scraped data, thereby optimizing it for downstream utilization.
- Developed web crawlers using Python & Scrapy for extracting computer component data from e-commerce platforms.
- Automated the data pipeline (SQL + Python), leading to a reduction in (TAT) from an avg. of 4hrs to under 10mins.
- PPO Awarded. Declined in pursuit of challenges within a Unicorn Startup.

Research Experience

University of British Columbia, Canada **Dec 2020 — Present**
Dr. Apurva Narayan (Dept. Computer Science)
- Developing a framework to provide vendors with item level modifications for improved user preference.
- Developed, frameworks of empirical and provably-certified adversarial defenses for CNNs.
- Developed a GAN-based adversary which generates adversarial perturbations for robust adversarial training.
- Developed a certified defence framework with a novel gaussian noise addition procedure for defending black-box CNNs.
- Publications accepted at **ICPR-2022, IEEE-IJCNN-2022**.

National University Singapore **Jun 2021 — Nov 2021**
Prof. Hongliang Ren, (Dept. Biomedical Engineering)
- Developed an lightweight multi-task learning model for robotic arm based surgical workflow recognition.
- Proposed method utilizes a pretrained ResNet18 with LSTMs to analyze robotic arm interactions over time.
- Our method gave individual attention to the physical parameters of both left and right arms of the robot.
- Published at **Journal of Computer Methods and Programs in Biomedicine**.

Publications

- **Introducing Diversity In Feature Scatter Adversarial Training Via Synthesis.** ICPR 2022
- **Towards Robust Certified Defense via Improved Randomized Smoothing.** IJCNN 2022
- **Peg Transfer Workflow recognition challenge report: Does multi-modal data improve recognition?** CMPB (Journal) 2023

Projects

Deep Reinforcement Learning For Control Problems **Apr 2020**
- Applied Deep Reinforcement Learning to create agents to perform different tasks automatically.
- Utilized Deep-Q-learning algorithm to create an agent that could play soccer and tennis.
- Developed an agent using the cross-entropy method that could land a lunar lander in a space environment.

Reddit Flair Detector **Mar 2020**
- Developed a machine learning-based Reddit post flair (eg: politics/business etc.) detection web app.
- Tested multiple models and chose the best(Support vector classifier) using a macro level based f1-score (**68%**) metric to account for all classes.