ANSH MITTAL

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EDUCATION

- University of Southern California | Los Angeles, CA August 2021-May 2023 MS in Computer Science; GPA: 3.8; Courses: Artificial Intelligence, Algorithms, Deep Learning, Applied NLP, Advanced Computer Vision, Autonomous Cyber Physical System, Information Retrieval & Web Search Engines
- Guru Gobind Singh Indraprastha University | Delhi, India August 2015-May 2019 Bachelors of Technology in Computer Science and Engineering; GPA: 8.97; Dept. Rank: 5; Relevant Courses: Operating Systems, Compiler Design, Computer Networks, Artificial Intelligence, Data Mining, Machine Learning with Python, Discrete Mathematics, C++

TECHNICAL SKILLS

- Languages & frameworks: Python, Flask, Django, PHP, C, C++, Lark, Bash, R, C#, MySQL, PostgreSQL
- Libraries: Pandas, NumPy, SkLearn, PySpark (MLlib), Plotly, TensorFlow, Keras, PyTorch, JAX, Matplotlib, W&B, OpenCV
- Developer Tools: Git, AWS (EC2, S3, Sagemaker), Docker, Kubernetes, Jenkins, Terraform, AirFlow, Kafka, MLFlow
- Skills: AutoML, NLP (BERT, GPT), Computer Vision, Reinforcement Learning, A/B Testing, ML System Design, MLOps

EXPERIENCE

AI/ML Research Engineer (Co-op), KNOW | Los Angeles, CA January 2023–May 2023 Developed personalized GenerativeQA using Prompt Engineering (GPT-J & GPT-NeoX) (METEOR: 22.34 (2%↑); STS: 0.87 (3.5%↑))

- Prepared a PoC for 3D Human Avatar (Using NeuMan & NHA) & Text-to-Speech for Generated Prompts and integrated with FastAPI
- Created GitHub CI/CD workflows with evaluation metrics for NLP and Neural Rendering models for Monitoring and Version Control August 2022–December 2022

Student Research Worker, USC IMSC lab | Los Angeles, CA

- Classified Street Objects using pre-trained models (MobileNet, EfficientNet, ResNet, etc.) with accuracy 0.71 (5.72%↑)
- Demonstrated I-SPLIT algorithm for Split-Computing on edge-devices using CUmulative Importance Map (CUI GradCAM)

ML Engineer Intern, Guidewire | San Mateo, CA

- Spearheaded Data Quality framework development for data artifacts (Sagemaker (Athena), PostgreSQL, S3) & improved velocity by 8%
- Automated Dashboard and Report generation (Confluence and StreamLit) using Docker Images with ML-automated test suite
- Added statistical tests (K-S & χ -squared) to monitor data distribution drifts and exceptions on data from Data Science teams
- Uploaded PyDQ-library as Docker container on S3 for monthly-scheduled automated data quality tests using Sagemaker Processing Jobs

Graduate Research Assistant, USC ISI lab | Marina Del Rey, CA

- Engineered a 3DMM features regression (62-D) baseline w/o explicit Face Landmark detection deploying and visualized on W&B
- Implemented 3D-Dense Face Alignment, Position-map Regression and Volumetric Regression N/w (Norm. Mean Error: 10.7 (23.62%↓))

Data Scientist (GIS/Computer Vision), Sociometrik | Delhi, India

- Led a team to develop Metal Roof-Detection pipeline (Avg IoU: 0.698) on AWS EC2 (Model rollbacks and updates) using AWS Lambda
- Orchestrated (AirFlow DAGs) Super-Resolution pipeline with LandSAT GIS-data using PyTorch UDF (Horovod support) in PySpark
- Built a Feature Extraction workflow (IoU: 0.785 (6.8%↑)), and a Car Segmentation PoC (F-score: 0.734 (3.7%↓)) using Jenkins CI/CD
- Achieved precision of 0.8699 (20%↑) and recall of 0.7939 (12%↑) in a PoC for Multi-Label classification of various terrains

Research Associate (Reinforcement Learning), IIT Delhi | Delhi, India

- Developed an Infotainment-based game to teach Blockchain to amateurs and professionals (Sequence-to-Sequence Chatbot)
- Integrated a clustering algorithm to group user feedback in a Cyber Threat game (Achieved accuracy of 76.32% (10.6%↑))

Web Development Engineer (Video), UVA Institute | Delhi, India

- June 2019-November 2019 Developed e-learning website with React/REDUX, Spring & MySQL and added video streaming compatibility with FFMPEG
- Comments/reviews Information retrieved using scrapy and analyzed course sales using EDA led to 15% \uparrow in revenue

PROJECTS [GitHub]

Segmenting E-Commerce Consumers with Clustering Explainability | ML, SHAP, AWS Sagemaker June 2022 Segmented customers using RFM-analysis & K-Means Clustering for E-Commerce application and exported results to S3-bucket Performed explainability and interpretability using SHAP KernelExplainer for global explanation for comparison with RFM-analysis **Real-Time Data Streaming with Object Detection** | *PySpark, Kafka, StreamLit* May 2022

- Implemented real-time data pipeline using Kafka to capture and stream data, enabling immediate analysis of incoming information
- Deployed Object Detection model on the streamed data using PySpark, integrated, and tested it with StreamLit application
- Few Shot Learning Approach to Dynamic Intent Satisfaction | GPT3, GPT-Neo, NLP (video) January 2022–May 2022
- Proposed a novel problem formulation-Intent Satisfaction (fulfill complex intents in slot filling systems) (BLEU (GPT_{dv}): 0.73)

• Curated benchmark dataset (with Docstrings and Function Definitions) of 500,000 tokens for Intent Satisfaction at different intent levels PUBLICATIONS [Scholar]

Detecting pneumonia using convolutions & dynamic capsule routing... | Sensors, MDPI • Detected: Pneumonia in Chest X-rays; Used: Capsule Networks in conjunction with CNNs; Accuracy Obtained: 96.36% (2.8%↑)

Cybersecurity Enhancement through Blockchain Training (CEBT)... | IJIM Data Insights, Elsevier (cited: 28)(paper)

Developed NAF-based (Actor-Critic Variant) Cont. NPC Adaptiveness Algorithm to augment Game Design & Mechanics with Feedbacks

Data Augmentation Based Morphological Classification of Galaxies... | ESIN, Springer (cited: 28)(paper) • Classified: Galaxy Morphologies; Used: Machine Learning, CNNs with L1 and L2 Regularization; Accuracy Obtained: 97.92% (0.4%↑)

ACTIVITIES

•	Viterbi Grad Hack Winners (DeepFake Detection (w/wo LipSync) Chrome Extension)	(project) (<u>video</u>)	April 2023
•	Qiskit Global Summer School (QGSS'21)	(certificate)	June 2021
•	Smart India Hackathon'18 2nd Runner-Up (LOgical Graph Augmented Virtual Indian Map) (project)	April 2018

May 2022–August 2022

February 2022–July 2022

October 2020-August 2021

January 2020–October 2020

(cited: 113)(paper)