Shriya Nagrath

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Professional Summary

Accomplished Machine Learning(ML) Engineer, with experience across three labs specializing AI for healthcare. I've led teams of up to five members to tackle complex problem statements in digital pathology and computer vision. Proficient in full project pipelines, from data wrangling to training competitive models (upto 340M parameters) and evaluating performance using metrics like AUROC and mean average precision. Extensive graduate coursework in ML and mathematics. Certified in multiple areas including Machine Learning and Computer Vision, with expertise in Oracle Cloud, distributed systems, and cross-functional collaboration.

Education

***Master of Science, Computer Science*: University of Southern California(USC)** **Aug 2022–May 2024**
ML, Algorithms, Information Retrieval, Database Systems *GPA: 3.91/4.0*

***Bachelor of Engineering, Electronics and Telecom*: University of Pune** **Aug 2015–Jun 2019**
Valedictorian *GPA: 9.55/10*

Work Experience

Research Assistant, USC **Jan 2024–Present**
USC Keck School of Medicine, AI4Health Lab Multimodal ML | Medical Image Analysis | OCR | RETFound | VGG | CV | XAI

- Working on predicting and categorizing the severity of Primary Angle Closure Disease (PACD). Using Anterior segment optical coherence tomography and **Foundational Retina analysis model**, adapted to downstream tasks.
- Explainability analysis using **Integrated Gradients** to distill parameters impacting racial variation in PACD.

Research Assistant, USC **May 2023–Jan 2024**
USC Dornsife, Department of Molecular Biology Python | Video analysis | Temporal Action Localization | Object detection | CV

- Leading a team of **6 developers** to analyze Drosophila motion patterns, employing: Small Object Tracking (customized YOLO) and Temporal Action Localization (ActionFormer). Achieving **mAP 65.6.**

Software Engineering Intern, *Packet Forwarding Group* **June 2023–Aug 2023**
Juniper Networks *(Westford, MA)* Python | JS | HTML | JSON| BaaS | Junos | Networking

- Designed, developed, and presented company-wide a platform-agnostic tool for accelerating the debugging pipeline, focusing on optimal data collection and efficient visualization while providing maximum user flexibility. High-impact project, aimed at shrinking product fault detection, analysis time, and customer issue resolution time.

Research Assistant, USC **Aug 2022-Dec 2022**
Autonomous Networks Research Group Python | Large model training | Anomaly detection| Time-series analysis | Meta Open Source

- Accomplished anomaly detection in multivariate, time-series data, leveraging GANs and time-series forecasting to ensure safe packet delivery across firewalls. Achieved **41%** improvement over baseline results.

Machine Learning Research Collaborator **May 2021–Sep 2021**
Indian Institute of Technology Bombay (Mumbai, India) Natural language processing | Transformers

- Built training pipeline of a multi-lingual model to grade essays in six languages, leveraging monolingual and multilingual transformers. Leading to diminishing manual grading effort by **one-fourth**; attaining **90%** test accuracy.

Summer School Student **Aug 2021**
The Cornell, Maryland, Max Planck Pre-Doctoral Research School Germany (Saarland , Germany)

- **Among 150 students selected from 10,000 students worldwide**. Interacted with leading scientists | Exchanged views with like-minded students | Exposed to State-Of-Art(SOTA) research through lectures and project symposiums.

Machine Learning Research Assistant **Feb 2021–Aug 2021**
Defence Research and Development Organisation (New Delhi, India) AI in healthcare | Life sciences

- Drove research towards detecting fatigue in subjects, operating biological parameters and quantifiable responses. SOTA models deployed for supervised classification, led to a **10 point** improvement over baseline results.

Software Developer, *CGBU* **Jul 2019–Jun 2022**
Oracle *(Bengaluru, India),* C++ | Design | Operating System | Networking | Customer satisfaction | Collaboration

- Conducted critical performance enhancements and memory leak resolutions, shrinking core latencies by **20%**.
- Led initiative to ease team's bug load by **15%**, solving **25 critical bugs** and **4 customer escalations**.
- Designed and programmed traffic emulation tool with **90+ customer scenarios** and capacity to generate upto **5 million** sessions in 6 hours, minimizing dependency on customer packet captures, snipping issue closure time by **30%**.

Projects

Business catalog application: crowd-sourced reviews, reservation manager, and more. **Aug 2022**

- Built a business search app using Yelp APIs. Frameworks deployed: Flask, NodeJS, Angular, and Android. Executed various functionalities and gained experience in more than **10 full-stack technologies.**

Richter's Predictor: Modeling Earthquake Damage **Feb 2023**

- Based on aspects of building location and construction, predicted level of damage to buildings caused by the 2015 Gorkha earthquake in Nepal. Achieved a **micro F1 score of 75.12 and ranked 3rd on class leader-board**.

Smart-Content-Delivery-and-Absorption Score Indicator | *Digital India Programme* **Feb 2021**

- Engineered an education quality indicator for schools in rural India. Proposed Composite Approach for Optical Character Recognition, Speech and Emotion Analysis. Generated 5% stimulus to academic scores in 150 villages

Video Summarizing for Sporting Events **Jan 2021**

- Deploying Sound Analysis and OCR pipelines to isolate important instances in events. Led to 18% effective snipping.

Skills

Languages: Python, SQL, C, C++, Java, JavaScript, HTML/CSS, SQL, JQuery

Machine Learning/Deep Learning Frameworks: Computer Vision, Numpy, Pandas, Seaborn, Scikit-learn, Keras, Tensorflow, PyTorch, OpenCV, CT Imaging, ResNet, NLP, Large Language Models(LLMs), transformers, Generative Adversarial Networks, Multimodal ML, explainable AI (XAI)

Tools/Tech/Database: Distributed Systems, Data Analysis, Predictive Analytics, Bootstrap, Flask, MongoDB, Valgrind, XML, Protocol Buffers, Wireshark, GNU Debugger, Kafka, Spark, Agile, AWS, Azure, Oracle Cloud, Jira, Git, Redis, React, Angular, Android, JSON,DOM, Google Cloud Platform.

Extended Education

1. Coursera - Machine Learning by Stanford University
2. Coursera - Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization
3. Coursera - Sequence Models
4. Coursera - Convolutional Neural Networks
5. Coursera - Neural Networks and Deep Learning
6. Coursera - Structuring Machine Learning Projects
7. Coursera - Mathematics for Machine Learning: Linear Algebra
8. Coursera - Mathematics for Machine Learning: Multivariate Calculus
9. Coursera - Natural Language Processing with Classification and Vector Spaces
10. Coursera - Natural Language Processing with Probabilistic Models
11. Coursera - Natural Language Processing with Sequence Models
12. Coursera - Natural Language Processing with Attention Models
13. Oracle University - EDV Python
14. Oracle University - EDV Data Science and Machine Learning Using Python EMP LVC
15. NPTEL - Analog Circuits
16. NPTEL - Programming, Data structures and Algorithms using Python
17. NPTEL - Computer Organization and Architecture