

Tanisha Khurana

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Education

North Carolina State University

Aug 2022 – May 2024

Master of Science in Electrical Engineering ; CGPA 3.94/4

Raleigh, NC

Relevant Courses: Digital Imaging systems, Advanced Digital Signal Processing, Random Processes, Neural Networks and Deep Learning, Advanced Machine Learning, Detection and Estimation theory, Pattern Recognition

Bharati Vidyapeeth University

Jul 2014 – Jun 2018

Bachelor of Technology in Electronics and Communication Engineering ; CGPA 3.74/4

Pune, India

Technical Skills

Languages: Python, C/C++, SQL, Bash **Developer Tools:** MATLAB, AWS, Docker

Frameworks: OpenCV, Pytorch, Tensorflow, Scikit-Learn, Pandas, Numpy, PIL, Flask

Experience

Precision Sustainable Agriculture, NCSU

March 2023 - Present

Graduate Research Assistant

Raleigh, NC

- Collaborated with USDA to integrate a camera system with an ML model for mapping crop species, biomass and densities.
- Engineered a containerized system with integrated RESTful APIs for seamless data visualization and control.
- Implemented an image classification model for precision farming, accurately differentiating crop species from weeds.

Active Robotics and Sensing Lab, NCSU

Jan 2023 - Present

Independent study under Dr. Lobaton

Raleigh, NC

- Performed an extensive literature review on chamber segmentation techniques for identification of Foraminifera species.
- Generated 2D segmentation masks from synthetic 3D reconstructions in Blender, serving as ground truth data for region-based and topology preserving edge-based segmentation.

Wobot.ai

May 2021 - Jul 2022

Computer Vision Engineer

New Delhi, India

- Developed customized Video Analytics and Smart Surveillance solutions for diverse industries including hospitality, food service, and retail, resulting in improved security and operational efficiency.
- Formulated algorithms for varied tasks including activity recognition, multi-object detection and tracking, pose estimation, motion detection, facial recognition, and person re-identification.
- Scaled ML models in high-throughput and low-latency using TF Serving and triton leading to 50% faster inference time.
- Improved accuracy of existing models by more than 20% using new data generation and augmentation techniques.
- Implemented a scalable and dockerized system and integrated backend and frontend for efficient deployment and live usage.

Intelto Labs

Jan 2020 - May 2022

Deep Learning Engineer

Gurgaon, India

- Led the entire development lifecycle for a real-time AI powered commodity grader utilizing size, color and visual defect analysis.
- Accomplished an identification accuracy of 95% and classification accuracy of approximately 90%.
- Applied state-of-the-art object detection models to classify 20 different fruits with high precision and average size error of ~1 mm.
- Enhanced commodity classification with K-means, color segmentation, and PCA significantly improving processing speed.
- Innovated a novel model cascading approach, enabling the sequential execution of multiple models to optimize inference performance on NVIDIA-powered edge devices.

Qiggle.ai

Jan 2019 - Oct 2019

Data Scientist

New Delhi, India

- Designed a predictive analytics solution for industrial applications using Anomaly detection and remaining life estimation
- Detected under-performing and abnormally-behaving assets to save weeks of lost power generation and reduce asset downtime.

Projects

Explainable AI for Deepfake Detection Model

May 2023

- Achieved an F1 score of 98% with Xceptionet architecture for deep fake detection on Face Forensics++ and Celeb-DF dataset.
- Applied Explainable AI (XAI) methods such as GradCAM, LIME and LRP to highlight the relevance of the input to the prediction and improved transparency and interpretability.

Lung Cancer Nodule Detection

May 2023

- Created 2D and 3D CNN VGG-16 models to detect lung cancer with 91% sensitivity using Luna16 DICOM images.
- Conducted data preprocessing for nodule patch extraction, performed voxel coordinate conversion, and applied data augmentation techniques to enhance the dataset's diversity and model robustness.

Modeling Food Web and Forecasting Populations for Endangered Wildlife Species

Apr 2022

- Collaborated with Endangered Wildlife OÜ through Omdena to build an automated data collection & extraction tool.
- Leveraged Beautiful Soup, Google Search API and journal parsing libraries such as pytesseract and tabula for efficient data extraction from PDFs and web sources.
- Developed a Haystack BERT QA model integrated with Streamlit and AWS RDS on the backend to track the population of various species over time.