Abhinav Raj Gupta

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LinkedIn Profile URL • Web Portfolio URL

TECHNICAL SKILLS

- **Programming Languages***:* Python for Machine Learning, Java, C, C++
- **Web Technologies & Tools***:* HTML, JavaScript, CSS, Python (Flask, Django), Linux Terminal, Jupyter Notebook, Visual Studio, GitHub, Kaggle
- **Data Skills & Design Tools***:* Data Visualization, Data Modeling, Advanced Excel, Canva, Illustrator

EXPERIENCE

Advanced Particle Detector Laboratory, Lubbock, TX
Undergraduate Student Research Assistant October 2022 – Present

- Engineered anomaly detection for silicon hexaboards using YOLOv5 and Roboflow, mastering advanced object detection techniques and achieving over 98% accuracy and precision in identifying defects.
- Developed a scalable web interface with Python and Flask to automate quality check, making processes more efficient and deepening expertise in web development for industrial applications.
- Deployed the solution across five assembly centers in three countries gaining experience in global system integration, ensuring high adaptability and consistent performance worldwide.

Center for Advancing Sustainable and Distributed Fertilizer Production (CASFER), Lubbock, TX
Undergraduate Student Research Assistant June 2024 – August 2024

- Utilized YOLO for object detection to characterize microplastics in wastewater, enhancing image-based analysis and achieving 94% recall and 95% precision.
- Optimized inspection workflows, reducing analysis time from 7 hours to under a minute, deepening process automation expertise.
- Investigated applications in visual microscopy and Raman spectroscopy, expanding knowledge in advanced microplastics detection and size estimation techniques.

PROJECTS

CleanScan: AI-Powered Waste Detection | Python, HTML, CSS, JS | GitHub

- Achieved over 80% precision and accuracy in real-time garbage detection using YOLO object detection techniques in a one-day hackathon project.
- Developed a full-stack web application for real-time garbage detection using YOLO object detection.
- Integrated user-friendly features, enabling efficient data uploads and visualization of results.

Wine Quality Prediction Using Logistic Regression | Python, Jupyter Notebook | GitHub

- Constructed a Logistic Regression model with Scikit-Learn, gaining foundational knowledge in machine learning while predicting red wine quality with high accuracy
- Designed a user-friendly interface to streamline input and display predictions, enhancing skills in data visualization and user interaction for ML applications

EXTRACURRICULARS

- **Campus Involvement**: Engineering Senate Rep., Student Govt. Assoc. TTU | Media & Comm. Strategist, Nepal Students' Assoc. TTU
- **Volunteering**: Fund Raiser for COVID crisis, Bio-medical Equipments monitoring, MOT, Nepal)
- **Honors and Awards**: Morrow Eng. Scholarship | TTU Presidential Scholarship | Best UG Research Poster Award 2023

EDUCATION

Texas Tech University, Lubbock, Texas December 2025
Bachelor of Science in Computer Science **GPA: 4.0**
Minor in Mathematics

- *Proposed Publication: Use of deep learning-based object detection techniques in quality control of wire bonds in silicon detectors*