Abhinav Raj Gupta

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LinkedIn Profile URL • Web Portfolio URL

TECHNICAL SKILLS

- **Programming Languages**: Python (proficient for machine learning), Java, C, C++
- **Web Technologies & Tools**: HTML, JavaScript, CSS, Linux Terminal, Visual Studio, GitHub, Kaggle
- **Data Skills & Design Tools**: Data Visualization, Data Modeling, Advanced Excel, Canva, Illustrator

EDUCATION

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

- *Coursework: Machine Learning, Data Structures, Algorithms, Object-Oriented Programming*
- *Proposed Publication: Use of deep learning-based object detection techniques in quality control of wire bonds in silicon detectors*

EXPERIENCE

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

- Engineered anomaly detection for silicon hexaboards using YOLOv5 and Roboflow, achieving over 98% accuracy and precision in identifying defects.
- Developed a web interface with Python and Flask to automate quality assurance testing, making processes more efficient.
- Deployed the solution across five assembly centers in three countries, 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, achieving 94% recall and 95% precision.
- Reduced inspection time from 7 hours (for a 10ml sample) to under a minute, significantly streamlining the process.
- Demonstrated improvements over manual methods, showcasing the efficiency of the model.
- Explored further applications in visual microscopy and Raman spectroscopy for enhanced microplastics detection and size estimation.

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 interface with HTML, JavaScript, and CSS, automating the detection process and enabling seamless user interactions.

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

- Built a Logistic Regression model with Scikit-Learn, achieving high accuracy in predicting red wine quality and helping users make informed decisions based on wine characteristics.
- Developed a user-friendly interface to streamline input and display results, enabling easy interpretation of wine quality predictions.

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, Mission Oxygen Team (MOT, Nepal)
- **Honors and Awards**: Morrow Eng. Scholarship | TTU Presidential Scholarship | Best UG Research Poster Award 2023