

Kushagra Agrawal

Data Scientist

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PROFILE

I am a budding Data Scientist with hands-on experience in AI/ML research pipelines, computer vision, and generative models. Actively exploring applications of AI in defense and robotics, with proven ability to prototype end-to-end solutions—from data ingestion through model deployment.

SKILLS

Machine Learning | Deep Learning | Python | MySQL | FastAPI | TensorFlow | PyTorch | Mathematics & Statistics | Model Optimization | PowerBI | Communication

PROJECTS

Vision Play [GitHub Link](#)

- **Developed a computer vision-based system** using **YOLO-based object detection** to track and analyze object movement in videos.
- **Implemented camera movement estimation and perspective transformation** to accurately measure object positions in real-world coordinates.
- **Designed an advanced tracking system** to compute the **speed and distance** of moving objects using frame-by-frame analysis.
- **Optimized the pipeline for efficiency**, leveraging **OpenCV, NumPy, and YOLOv8**, ensuring real-time processing of sports and surveillance footage.

Network Security Detection [GitHub Link](#)

- Designed and implemented a robust ML pipeline to detect phishing websites using scikit-learn, achieving efficient data preprocessing, model training, and evaluation.
- Built a custom exception handling system for better debugging and error traceability, ensuring smooth functionality across the project. Conducted EDA on 5,000+ samples; engineered 30+ features.
- Processed and validated structured data using YAML schema, ensuring accuracy and consistency of 30+ features for model input with 95% accuracy in phishing detection using ML.
- Conducted hyperparameter tuning using GridSearchCV, improving model performance and precise evaluation metrics like R² scores.

Virtual Broadcaster [GitHub Link](#)

- **Developed a real-time virtual broadcasting system** using YOLOv8, OpenCV, and FastAPI, enabling seamless background segmentation and dynamic virtual environments.
- **Integrated real-time virtual camera streaming** with PyVirtualCam, allowing users to replace or blur backgrounds dynamically for video conferencing and content creation.
- **Optimized segmentation with YOLOv8 and custom post-processing**, enhancing mask accuracy through erosion techniques for smoother and more natural background effects.
- **Built a FastAPI-based backend for seamless control**, allowing users to start/stop streaming, adjust FPS, and modify background settings via a web interface.

EDUCATION

Bachelor's degree, *Amity University, Noida*;

July 2024–July 2027
Noida, Uttar Pradesh

SGPA: 9.08

- Relevant Coursework: Algorithms and Data Structures, Database Management System, Operating System, Linear Algebra, Discrete Mathematics, Fuzzy Logic, and Big Data

Schooling, *Agarwal Vidya Vihar, Surat*;

2012 – 2024
Surat, Gujarat

- Relevant Coursework: Communication, Probability and Applied Statistics, Python Programming, Life Ethics

Publications

- **My Data Science Learnings So Far** (11/2024) [Link](#)
- **Struggles in My Data Science Journey** (08/2024) [Link](#)
- **My Journey into the World of Data** (08/2024) [Link](#)

INTERESTS

Reading Books | Writing Tech Blogs | Traveling | Playing Badminton, Chess
