RIDHI GARG

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Education

Maharaja Agrasen Institute of Technology (MAIT)	New Delhi, India
Bachelor of Technology in Electrical and Electronics Engineering	*Sep 2025 - Sep 2029*

Technical Skills

- **Programming Languages:** Python, C/C++, JavaScript, HTML5, CSS
- **Machine Learning / Deep Learning:** Supervised & Unsupervised Learning, Artificial Neural Networks (ANN), Convolutional Neural Networks (CNN), Recurrent Neural Networks (RNN), Fine-tuning Large Language Models (LoRA, QLoRA), YOLOv8
- **Libraries & Frameworks:** Scikit-learn, Pandas, NumPy, Matplotlib, Seaborn, TensorFlow/Keras, OpenCV, React.js, Tailwind CSS
- **Developer Tools:** Git, GitHub, Jupyter Notebook, VS Code, Google Colab
- **Platforms:** Vercel, Netlify, Render

Experience

Machine Learning Intern — IITD-AIA Foundation for Smart Manufacturing   **Apr 2025 - Aug 2025**
New Delhi, India

- **Enhancing Food Security with Smart Warehouse Surveillance** | *Python, YOLOv8, OpenCV, Edge AI*
  * Designed computer vision pipeline with YOLOv8 to detect **5+ classes** (rodents, pests, birds, dogs, humans).
  * Deployed centralized, edge, and hybrid models, reducing bandwidth usage by **30%+**.
  * Integrated real-time dashboard for monitoring, cutting false positives by **25%** and improving response time.
- **Sheet Metal Defect Detection** | *Python, PyTorch, YOLOv8, Image Segmentation*
  * Collected and annotated **2K+** images of sheet metal with burrs, scratches, dents, and wrinkles.
  * Built custom instance segmentation pipeline using YOLOv8 + PyTorch for defect detection.
  * Optimized models to achieve **92% mAP**, enabling accurate real-world defect identification.
- **Ensuring Lab Compliance with Vision-Based Violation Detection** | *Python, OpenCV, TensorFlow, RTSP*
  * Engineered vision pipeline to process **RTSP video streams** and detect motion + human presence.
  * Implemented violation detection system with **95% accuracy** to identify lab attire breaches.
  * Integrated GPIO-controlled alarm + dashboard logging, reducing manual compliance checks by **40%**.

Projects

Amazon Review Sentiment Analysis — *Python, NLTK, TF-IDF, Logistic Regression, LSTM*   **Mar 2025**
- Preprocessed 34K+ Amazon reviews with tokenization, lemmatization, and stopword removal.
- Deployed TF-IDF + Logistic Regression model achieving **92% accuracy**.
- Developed LSTM model improving sentiment prediction by **9%**, reaching **94% accuracy**.

Cancer Prediction | *Python, Scikit-learn, Pandas, NumPy*   **Feb 2025**
- Preprocessed **570+ patient diagnostic records** (missing value handling, normalization, SMOTE).
- Leveraged Random Forest and SVM models, achieving **94% accuracy** and **0.96 ROC-AUC**.
- Applied explainability with feature importance + confusion matrices for healthcare interpretability.

Movie Recommendation System | *Python, Pandas, Scikit-learn*   **Jan 2025**
- Developed a content-based recommendation system using cosine similarity on movie genres, keywords, and cast information, achieving a top-5 recommendation accuracy of **87%**.
- Used Pandas for data cleaning and feature engineering on a dataset of 50,000+ movies, improving model relevance by 30%.
- Implemented **TF-IDF** vectorization and similarity scoring, resulting in a mean reciprocal rank (MRR) of 0.78 for user movie suggestions.
- Added a simple CLI where users could enter a movie title and receive a list of 10 personalized recommendations, increasing engagement in testing by **40%**.

Leadership / Extracurricular

Bhashadoot Samman Awardee | *New Delhi*   **Jan 2023**
- Honored with the "Bhashadoot Samman" for excellence in Indian languages (Hindi/Sanskrit/Punjabi/etc.) in the Class 10 Board Examination.
- Awarded by a collaboration of the Ministry of Culture, Government of India and associated national academies.

DD-Robocon 2025 | *IIT Delhi*   **Jul 2025**
- Volunteered as a member of the Website and Sponsorships Team for DD-Robocon 2025.
- Contributed to the successful organization of the event conducted by IIT Delhi in collaboration with Prasar Bharati and STPI.