

# SAQUIB HUSSAIN

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## SKILLS

- **Programming Languages:** Python, R, C, C++, DSA (C++), MySQL, HTML
- **Libraries and Frameworks:** Scikit-learn, NumPy, Pandas, Matplotlib, Seaborn, OpenCV (Image Processing).
- **Machine Learning and Data Science:** Supervised and Unsupervised Algorithms, Reinforcement Learning, NLP, Deep Learning, Machine Learning Statistics, Data Science pipeline (data cleansing, visualization, modeling, interpretation).
- **Other Skills:** Hypothesis Testing, OOP, Excel, Git, GitHub, Streamlit.

## WORK EXPERIENCE

### Research Intern (Reinforcement Learning and Deep Learning) – IIT Jammu Feb 2024 – Jul 2024

- Researched and developed a Reinforcement Learning-Based Intrusion Response System (RL-IRS) by integrating the Bellman equation and hyperbolic tangent reward function into a custom RL model.
- Implemented the VarDetect framework, generated attacker/non-attacker datasets (Fashion MNIST, CIFAR-10), and calculated Maximum Mean Discrepancy (MMD) and Mahalanobis distances for threshold analysis.
- Created adversarial samples using FGSM attack with ResNet-50, extracted embeddings using VAE, and visualized datasets in 3D via PCA.
- Evaluated the model's performance with a confusion matrix (TP=974, FN=26, FP=387, TN=613).

### Machine Learning Intern – iHUB at IIT Roorkee Jul 2023 - Sep 2023

- Learned Python libraries (e.g., Matplotlib, NumPy, Pandas) and Machine Learning Algorithms (e.g., SVM, KNN, Naïve Bayes, Decision Tree, Random Forest, Linear and Logistic Regression and Apriori Algorithms).
- Completed a project that explored different datasets using various classifiers.
- During the learning phase, I pushed all code to GitHub to secure my learning and project works in [GitHub Repository](#).

## AWARDS

- 3x Kaggle Expert (Dataset, Notebook, Discussions) [Link](#)
- Total 900+ Contributions and 30+ Repositories on GitHub [Link](#)
- Completed over 800 coding challenges on various platforms [Link](#)
- Hackathon: Dark Patterns Buster Hackathon (DPBH – 2023, IIT BHU - Varanasi) – Finalist [Link](#)

## PROJECTS

### [Link](#) Object detection and tracking algorithm implementation for real-time video streams and static images

- Designed and implemented an object detection and tracking system using YOLOv8 and Streamlit.
- Supported real-time video streams (RTSP, Webcam, YouTube) and static images/videos.
- Added features for task selection (detection/segmentation), adjustable confidence thresholds (25 – 100), and CSV export for detection results. Also, integrated ByteTrack and BoT-SORT algorithms for advanced object tracking and segmentation.

### [Link](#) MasterChef: Transformer-Based Recipe Generation

- Developed a deep learning-powered application utilizing ResNet101 as an encoder and a Transformer-based decoder (8 layers, 16 head attention) to generate personalized recipes from food image.
- Supports learned (1024 positions) or sinusoidal positional encoding, with a linear + softmax final layer.

## EDUCATION AND HONORS

| Degree and Board               | Institute   | CGPA/Percentage | Year         |
|--------------------------------|---|-----------------|--------------|
| B.Tech. (H) CSE (Data Science) | University Teaching Department, CSVTU, Bhilai, C.G. | 9.00            | 2021-Present |
| Senior Secondary School / CBSE | Sun Valley Public School, Varanasi, U.P.            | 65.60%          | 2021         |
| Secondary School / CBSE        | J.N.V. Bhadohi, U.P.                                | 79.80%          | 2019         |