Harsh Kumar

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EDUCATION

VIT Bhopal University — Bhopal, India
B.Tech. Computer Science & Engineering; CGPA:8.42 — *Aug. 2022 – Aug. 2026*
Courses: DSA, Computer Networking, DBMS, Object Oriented Programming, Operating Systems, Machine Learning, Cloud Computing

Army Public School Jodhpur — Jodhpur, India
Intermediate and Matriculation — *Mar. 2019 – May. 2022*
Courses: Physics, Chemistry, Mathematics, English and Computer Science

SKILLS SUMMARY

Languages: Python, C, C++, Java, MySQL
Frameworks: PyTorch, TorchVision, TensorFlow, Keras, OpenCV
Developer Tools: Git, GitHub, Google Colab, AWS, VS Code
Libraries: Pandas, NumPy, Matplotlib, OpenCV
Tech Skills: Machine Learning, Deep Learning, Computer Vision, Competitive Programming, OOP
Soft Skill: High Agency

WORK EXPERIENCE

SCAN-dinavian: A Chess Board Position Recognition Model | *Python, PyTorch, TorchVision, PyTorch Lightning*
- Built a deep learning model using **EfficientNetV2-S** to recognize real-world chess positions and convert them into **FEN notations**, achieving **91%** accuracy on **14,500+** test images.
- The model infers all **64 squares simultaneously** predicting both piece type and color for every square, and generates engine-ready **FEN strings** in **0.7–0.9 seconds** per board, enabling rapid integration with **chess engines** like **Stockfish**.
- Used a **hybrid dataset** of **3,000+ Unity-rendered** synthetic and **9,500 crowdsourced** images across 8 different board styles and 5 piece sets.
- Achieved a **validation accuracy** of **95%** per-square (**Binary 99.9%, Colors 97.4%, Full 95.0%**) across **100 training epochs** with stable convergence.

Realtime Face Mask Detection | *TensorFlow, Keras, OpenCV, VGG16, HaarCascade*
- Developed a deep learning-based face mask detection system using **custom CNNs**, achieving **96.2% training accuracy** and **94.3% test accuracy** on a dataset of **7,500+ labeled images**.
- Integrated with **OpenCV** for real-time webcam inference at **30 FPS** on **CPU-only systems**, ensuring smooth performance **without GPU dependency.**
- Utilized **Haar Cascade Classifier** to perform face detection in under **20 ms per frame**, enabling precise region extraction and reducing false positives by **15%** compared to naive detection methods.

ACHIEVEMENTS AND CERTIFICATIONS

- **All India Rank (AIR) 57** and **College Rank 1** in **ICPC Preliminary Round 2024**
- **Pupil @ Codeforces** (1325 max.), **3 star** coder on **CodeChef**, **1608** rating on **LeetCode**
- **Smart India Hackathon (SIH)** 2024 Internal Round Finalist
  - Selected as one of the top 50 teams from over 430+ idea submissions.
- **Deep Learning Specialization** by DeepLearning.AI
  - Supervised Machine Learning: Regression and Classification
  - Neural Networks and Deep Learning
  - Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization

HOBBIES AND INTERESTS

- Reading about new advancements in the field of Artificial Intelligence
- Problem solving and competitive programming
- Playing Chess