

Harsh Deshmukh

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EDUCATION

Indian Institute of Information Technology, Allahabad
B.Tech in Information Technology - Business Informatics

2023 – Present
CGPA: **8.04/10**

Kendriya Vidyalaya, Pushp Vihar, New Delhi
CBSE - Class XII

June 2023
Percentage: **91.8%**

Kendriya Vidyalaya, Pushp Vihar, New Delhi
CBSE - Class X

June 2021
Percentage: **95.0%**

PROJECTS

1. GovQueryAI – A RAG-powered chatbot for government employees [Flutter](#) [Backend](#)

- **Goal:** Built a **RAG-based** chatbot with a **Flutter UI** to help central government staff retrieve policy information efficiently.
- **Interface:** Built a responsive **Flutter mobile app** with sleek **landing page**, **interactive chat**, and secure **signup** flow.
- **Retrieval:** Utilized **LangChain**, **FAISS**, and the **mpnet-base-v2 embedding model** for efficient semantic search.
- **Response Generation:** Integrated the **mistral-large-2402-v1** model via **AWS Bedrock** for accurate, contextual replies.

Technologies Used: Flutter, Dart, FastAPI, LangChain, FAISS, AWS Bedrock (Mistral), Hugging Face Embeddings, Python, boto3

2. Handwritten Math Expression Recognition using DenseNet and GRU-Attention [GitHub](#)

- **Goal:** Developed a system to convert scanned handwritten mathematical expressions into digital character sequences.
- **Feature Extraction:** Implemented a custom **DenseNet-121 CNN** to extract structured spatial features from input images.
- **Sequence Modeling:** Designed an attention-based **GRU** decoder to generate symbol sequences representing math expressions.
- **Evaluation:** Achieved **18.2% WER** and **36.3% SACC** in handwritten math expression recognition.

Technologies Used: Python, PyTorch, torchvision, NumPy, GRU, Attention Mechanism, Pickle

3. Brain Tumor MRI Classification with Xception CNN Backbone [GitHub](#)

- **Goal:** Built a model to classify MRI scans into Glioma, Meningioma, Pituitary tumors, and No Tumor for diagnostic support.
- **Model and Performance:** Achieved **99%** accuracy in classifying brain tumor MRI scans using a custom **Xception-based CNN** with dense layers and dropout, and attained **0.99+** precision, recall, and F1-score across all four tumor classes.
- **Training Configuration:** Applied Adamax optimizer, categorical cross-entropy loss, EarlyStopping, and data augmentation.

Technologies Used: Python, TensorFlow, Keras, NumPy, Pandas, Matplotlib, Scikit-learn.






RELEVANT COURSEWORK

Data Structures and Algorithms, Object Oriented Programming , Software Engineering, Computer Organisation and Architecture, Operating System, Database Management System, Computer Networks

SKILLS

- **Languages:** C, C++, Python, Java(Basics), HTML, CSS,
- **Libraries, Frameworks and Others:** Keras, Tensorflow, PyTorch, OpenCV, Scikit-learn, NLTK, Langchain, Flutter

ACHIEVEMENTS

- Solved a total of **500+** problems on various platforms such as [LeetCode](#) , [Coding Ninjas](#) , and [GeeksforGeeks](#) .
- Achieved a maximum rating of **1639 (3 star)** on [CodeChef](#)  through participation in **15+** rated contests.
- Achieved a max rating of **1856 (Knight)** on [LeetCode](#)  after participating in **15+** contests.
- **Joint Entrance Examination (JEE) Mains 2023:** Secured a **99+** percentile among over 12 lakh candidates.
- Awarded the **PM's Scholarship** under the National Defence Fund, granted to **2000** students across India for higher education.

POSITION OF RESPONSIBILITY

- **Executive, Finance** at **Effervescence**, IIITA's cultural fest; handled budgeting, expense tracking, and sponsorship funds.
- Volunteered with **PRAYAAS** to support education and growth programs for underprivileged children in the local community.