Shrihari Dumbre

Roll No.: B23EE1069
Electrical Engineering
Department Of Electrical Engineering
Indian Institute Of Technology, Jodhpur

+91-9529076080
shriharidumbre16@gmail.com
b23ee1069@iitj.ac.in
Github
linkedin.com/in/shrihari-dumbre

Education

Examination	Degree/Certificate	Institute/School	CGPA/Percentage	Year
Graduation	B.Tech. (EE)	Indian Institute of Technology, Jodhpur	7.77 (current)	2023-present
Intermediate/+2	CBSE (XII)	SNBP International School, Pune	89.2%	2023
Matriculation	ICSE (X)	Podar International School, Pune	97.1%	2021

Key Courses Taken

Completed: Data Structures and Algorithms, Linear Algebra, Probability, Statistics and Stochastic Processes, Calculus, Pattern Recognition and Machine Learning, Computer Architecture, Signals and Systems
In Progress: Natural Language Processing, Machine Learning for Communications, Embedded Systems

Experience

- **Machine and Medical Vision Lab (MMVL)** *Sept. 2024 - Present*
  Undergraduate Researcher IIT Jodhpur, India
  – Applied machine learning techniques to analyze multimodal healthcare data for classification and pattern discovery.
  – Worked with large-scale datasets, engineered features, and built scalable pipelines using **Python** and **PyTorch**.
  – Explored dimensionality reduction and low-rank fusion methods to optimize performance and interpretability.
  – Implemented **U-Net**, **LSTMs** and **Fusion Models**; used Pytorch for experimentation.

Projects

- **Masked Autoencoder for Self-Supervised Image Representation Learning**
  Personal Project **GitHub**
  – Implemented a **MAE** architecture with a **Vision Transformer** encoder for **self-supervised representation learning**.
  – Trained the model on **CIFAR-10** using a **75% masking strategy** and **reconstruction objective**.
  – Evaluated learned representations via **linear probing** (**61.25% accuracy**) and **kNN classification** (**50.4% accuracy**).
  – Visualized feature embeddings using **t-SNE**, demonstrating meaningful clustering of semantic classes.
  – **Skills Used: Python, PyTorch, Self-Supervised Learning, Vision Transformers, Representation Learning**.

- **Low-Rank Multimodal Fusion for Gastric Histopathology Classification**
  Design Credits Project under the guidance of Dr. Bikash Santra **GitHub**
  – Developed a multimodal PyTorch pipeline fusing ResNet-50 image features and Sentence-Transformer captions, achieving a peak of **89.8%** accuracy on the PatchGastricADC22 dataset.
  – Implemented **Low-Rank Multimodal Fusion (LMF)** to efficiently model cross-modal dependencies and a **Attention Pooling** layer to aggregate patch-level features into global slide representations.
  – Engineered end-to-end data processing, including automated feature extraction and stratified dataset partitioning for robust adenocarcinoma subtype classification.
  – **Skills Used: Python, PyTorch, Deep Learning, Multimodal Learning, Attention Mechanisms, Computer Vision**.

- **In-Memory Graph Based Database**
  Data Structures and Algorithms Course Project under the guidance of Dr. Dip Sankar Banerjee **GitHub**
  – Designed a Neo4j-inspired graph database from scratch using adjacency lists, hash maps, and custom indexing for nodes and relationships.
  – Developed a query parser supporting **20+ operations** for CRUD, property management, and graph traversal with JSON responses.
  – Built a Python GUI using Tkinter for real-time query execution; optimized with label-based indexing for O(1) node retrieval.
  – **Skills Used: C++, Data Structures and Algorithms, Python, Graph Theory**

Technical Skills

- **Programming:** Python, C/C++, SQL
- **Frameworks and Libraries:** Pytorch, NumPy, Pandas, Matplotlib, Scikit-Learn
- **Machine Learning:** Deep Learning, Computer Vision, Self-Supervised Learning, Transformers, Multimodal Learning, Multiple Instance Learning, Representation Learning
- **Tools:** Git/GitHub, Google Colab, Jupyter Notebooks

Achievements

•Secured **All India Rank (AIR) 6002** in **JEE Advanced 2023**, among the top performers in India.

•Secured **All India Rank (AIR) 950** in **IISER Aptitude Test 2023**, among the top performers in India.

•Ranked within the **top 0.5%** out of over 1 million candidates in **JEE Mains 2023**.