




KSHITIJ PARIKH

Final Year

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Education

Indian Institute of Technology, Jodhpur

July 2019 – May 2023

B.Tech in Computer Science and Engineering, CGPA 8.30/10

Jodhpur, Rajasthan

Bright VIP School

June 2017 – May 2019

Higher Secondary Education, GSEB, Percentage: 88.77 %

Vadodara, Gujarat

Bright Ambalal School

May 2017

Secondary Education, GSEB, Percentage: 89.86 %

Vadodara, Gujarat

Research Experience/Projects

Multi-modal queries for Image Retrieval System | Dr. Anand Mishra — IIT Jodhpur

January 2022 - Present

- Researching on novel architectures and loss functions to use **sketch and text for image retrieval** from large database systems.
- **Created a database** for the problem statement using Visual Genome and Google Quick Draw.
- Modified SOTA sketch based image retrieval models (**DeepSBIR, DSSA, Doodle2Search**), SOTA text based image retrieval models (**CLIP, ViLBERT, LXMERT, VisualBERT, mPLUG**) and, SOTA image + text based image retrieval models (**TIRG**) tested on our dataset.
- Working on **single encoder early fusion and multi encoder late fusion models** with various loss functions to produce SOTA results. Currently developing 4 novel models : a) *Single-encoder multimodal transformer (MMT)* b) *Object Localization MMT* c) *MMT with Classification and Object Detection Loss* d) *2 Step model using CLIP as the backbone*. Models b, c, and d already outperform previous SOTA. Performing ablation studies to test the limits of the models.

Automatic Speaker Verification and Spoofing Counter Measures | Dr. Richa Singh — IIT Jodhpur **June - July 2021**

- Analysed the SOTA Machine Learning algorithms for **audio forgery detection**.
- Worked on implementation of different **TTS models** for generating audio deepfake to be used for training dataset for **detection model**. Worked with **Tacotron 2** to generate an end-to-end text-to-speech model for generating audio spoofs.
- Obtained experience on working with **NVIDIA DGX2**.

Blood Cell Classification and Malaria Detection | Dr. Mayank Vatsa — IIT Jodhpur

March - May 2022

- Data processing for Blood Cell Classification and Malaria Detection images using Digital Image processing such as **enhancement and segmentation**. Conducted detailed experiments to **the effectiveness of Feature Extraction** using ResNet-50 and **transfer learning** to various pre-trained CNN architectures.

Multi class Image Classification on the CIFAR-10 | Dr. Richa Singh — IIT Jodhpur

March - May 2021

- Successfully implemented an **end to end pipeline** of **various ML algorithms** such as **SVM, MLP, Random Forest** all using Sklearn, CNN using Tensor Flows with and without **dimensionality reduction using PCA** and analysis of various different aspects using Pandas and Numpy in Python.

Binary class Image Classification for a Mask data set | Dr. Richa Singh — IIT Jodhpur

March - May 2021

- Used **OpenCV** and successfully implemented an end-to-end pipeline of various ML algorithms such as **SVM, MLP**, and **Random Forest** all using Sklearn, CNN using Tensor Flows with and without dimensionality reduction using PCA and analysis of various different aspects using Pandas and Numpy in Python.

Technical Skills

Programming Languages: Python, C, C++, , SQL, Java,

Libraries: Pytorch, Tensorflow, Numpy, Sklearn, OpenCV, Matplotlib, Pandas

Technologies/Frameworks: GitHub, CUDA, Docker, Kubernetes, MATLAB, Simulink, Xilinx, Solidworks

Development: HTML5, CSS3, JavaScript, Bootstrap, Android Studio

Others: Competitive Programming, Problem Solving,

Relevant Coursework

- Real Analysis and Multi-Variable Calculus
- Linear Algebra and Ordinary Differential Equation
- Probability, Statistics and Stochastic Process
- Maths for Computing
- Pattern Recognition and Machine Learning
- Natural Language Processing
- Computer Vision
- Deep Learning
- Dependable AI
- Optimization for Machine Learning
- Machine Learning for Big Data

Teaching Experience

- Teaching Assistant, of course, Computer Network with class size 180+ taught to 3rd and 4th year Bachelor students. Responsibilities involved conducting quizzes/class tests, checking papers, and conducting labs.

Academic Achievements

- 5th Rank in Computer Vision hackathon conducted by Prithvi.AI for object localization of defects in silk clothes.
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- Secured Global Rank 62 among 30,000 others in Codeforces April 2021 Long Challenge
- Secured **AIR-2998** in JEE Advanced 2019 out of 2 lakh students
- Secured **AIR-1777** in JEE Mains 2019 out of 10 lakh students
- Qualified for RMO Gujarat 2017 and 2018
- Cleared first round of INChO 2018 and INAO 2018
- Excellent performance at East Africa Round 2014 in Nairobi, Kenya, and Global Junior Round 2014 in Singapore
- Qualified for the final round of **World Scholar's Cup** Tournament of Championship 2014 at Yale University, Connecticut.
- Pursued **French** as a second language during secondary school from Grade 6 to Grade 9

Leadership / Extracurricular

Rotaract Club

Jan 2020 – March 2020

Core Team Member

Indian Institute of Technology, Jodhpur

- Helped organised **Blood Donation Drive** and raise Awareness.

Ignus, Marketing Team

Jan 2020 – Feb 2020

Core Team Member

Indian Institute of Technology, Jodhpur

- As a two-member brought sponsorship of net amount of **Rs.1,15,000** for college's cultural fest where around Rs.10,000 was the team average.
- As a two-member made **cold calls** to more than **50 possible sponsors** for the college's cultural fest and visited more than 20 possible sponsors

Alumni and Industry Day

Jan 2020 – Jan 2020

Personal Escort

Indian Institute of Technology, Jodhpur

- Performed my duty as the **personal escort** for a whole day to Commander Pradeep Prasad, who served the Indian Navy for 21 years and is a current Governing Council Member IIT Alumni Centre