

Rigved Shirvalkar

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Education


2020 – 2024 **Bachelor of Technology in Electronics & Computer Engineering**
Amrita School of Engineering

Skills

Deep Learning	Machine Learning
PyTorch	TensorFlow
Python	Pandas
Numpy	Jupyter
Git	Web Development
ReactJS	Django

Organizations

2022/05 – present **AI@Amrita** 
Team Member

2020/12 – 2021/05 **amFOSS** 
Team Member

Projects

YOLO V8 - CAM

The first package for applying EigenCAM on the newly released YOLO V8 model.

- Can be used on YOLO V8 classification and object detection models.
- It generates the heatmap to help visualise which region of the image, the model is focusing on

Pneumonia Detection from X Ray images

Detection of pneumonia from X Ray images using Pytorch

- Deployed using an ensemble of 2 ResNet models along with a custom CNN model.

FaceRec

Custom face recognition app trained using Siamese Neural Network

- Trained locally using custom face dataset for positives and LFW dataset for negatives
- App made using Kivy for User Interface

Carvana Image masking

Image segmentation of cars using UNET

- Implemented using Pytorch
- Deployed using Heroku

NFS - Neural Net from Scratch

- Neural Network Created from Scratch
- Using only Python and Numpy

Courses

Neural Networks and Deep Learning

an online non-credit course authorized by DeepLearning.AI and offered through Coursera

Structuring Machine Learning Projects

an online non-credit course authorized by DeepLearning.AI and offered through Coursera

Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization

an online non-credit course authorized by DeepLearning.AI and offered through Coursera

Introduction to Deep Learning Using PyTorch

Udacity

CS50's Introduction to Artificial Intelligence with Python

Offered by EdX

HarvardX PH125.8x Data Science: Machine Learning

Offered on EdX

IBM Deep Learning with Python and PyTorch

Offered on EdX

Research Work

Methods for Bias Mitigation for computer vision models:

- Conducting Research under Dr. Geetha M, Vice Chairperson , School of Computing, Amritapuri | Assistant Professor (Sl. Gd.) , School of Computing, Amritapuri
- Experimenting with recent methods used for mitigating bias in computer vision models
- Paper submitted to 7th International Conference on Electronics, Material Engineering and Nano-Technology (Under Review)
- Working on further research work to publish in journal

Enhancing Pneumonia Detection Accuracy through ResNet-Based Deep Learning Models and Ensemble Techniques: A Study Using Chest X-Ray Images

- Conducted research under Ms. Remya, Vice Chairperson, Electronics and Communication Engineering, School of Engineering, Amritapuri | Asst. Professor, Electronics and Communication Engineering, School of Engineering, Amritapuri
- Experimented with best ways to improve the accuracy of the model and showed a proper pipeline and approach to address it
- Paper submitted to 8th International Conference on Smart Trends for Computing and Communications (Under Review)

Methods for Underwater Image Enhancement :

- Conducting research under Dr. Sumi Suresh M. S, Assistant Professor, School of Computing, Amritapuri
- Implementing works of past research papers on this topic, and performing comparative analysis to find the best algorithms
- Leveraging both qualitative and quantitative analysis methods to determine the effectiveness of various enhancement approaches

Professional Experience

2021/01 – 2021/03

Internship program in Machine Learning

FoxTradingSolutions ☑

- Trained models to fit datasets with the highest accuracy possible
- Solved some case studies on machine learning problems

2021/03 – 2021/07

Web Developer

Traboda ☑

- Added features and solved issues in both backend and frontend
- Used CSS, ReactJS and Django

2023/06 – present

Deep Learning project Contributor

Red Hen Lab 

- Creating a multimodal Deep Learning Pipeline for generating captions that explain the meanings of speech gestures in Christian Art Images
- Applied Style transfer using AdaIn to generate data similar to art images for fine-tuning the YOLO V8 pose detection model
- Used a pre-trained pose detection transformer from a research paper that specifically trained it on art images
- Created and annotated over 2000 images for training the palm gesture detection model using YOLO
- Created another dataset of 1000 images for classifying and detecting the person in the images and further improving the caption generated by the pipeline.
- Trained YOLO V8 classification and object detection models on these datasets, and created a pipeline combining them to provide the final output.
- Currently working on applying RAG (Retrieval-Augmented Generation) to explain meaning and symbolism of the gestures used in the image.

Achievements

Got selected for the prestigious 6th Summer School on AI ('22) offered by IIITH

The intended audience for the Summer School are those currently enrolled in Masters or PhD programs in the fields of AI, computer vision, and other related areas.

The program is also open to undergrads who are very enthusiastic about the field.

324 in the GRE General Test (January '23)

170 in Quantitative Reasoning

154 in Verbal Reasoning

4 in AWA

Conducted a workshop on 'All about Open Source and GSOC (Google Summer of Code)'

Conducted a workshop for freshmen engineering students of Dhole Patil University, where I guided and taught the juniors how to get started with contributing in Open Source communities and participate in the programs and opportunities that are available. Also received a Letter of Recommendation from the principal of the University for the same.