Vaishnavi **Khindkar**

Research Fellow · CVIT lab, IIIT Hyderabad

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Summary

Being a hard worker with a positive and never give up attitude and with deep interest in field of Computer Vision and Deep Learning, I aspire to develop effective and intelligent solutions and contribute towards betterment of the society.

Education

SPPU (Savitribai Phule Pune University) *78.43%*

B.E. in Computer Engineering *Mar. 2015 - Aug. 2018*

NMV Jr. College Pune *74.5%*

HSC *Mar. 2013 - Aug. 2014*

KSDSV (Shanbhag Vidyalaya) *95.09%*

SSC *Mar. 2003 - Aug. 2012*

Publications

My work at CVIT lab, IIIT Hyderabad; titled, **To miss-attend is to misalign! Residual Self-Attentive Feature Alignment for Adapting Object Detectors** got **accepted** at **WACV conference** 2022.

Inventor : Khindkar, Vaishnavi M. **An efficient and scalable architecture for underwater plastic detection and cleaning using Underwater Autonomous Vehicle (AUV) and CycleGans as Data Augmentation technique to convert in air plastic to underwater style.**
Patent No : *202021028978*

Author : Khindkar, Vaishnavi M. **IOT BASED SMART HOME USING FACE RECOGNITION.** *International Journal of Creative Research Thoughts (IJCRT).* Feb 2018. ISSN:2320-2882, Volume.6, Issue 1, Page No pp.321-326. Publication : http://www.ijcrt.org/papers/IJCRT1802045.pdf

Work Experience

CVIT lab, IIIT Hyderabad *Hyderabad, India*

Computer Vision Research Fellow *Aug. 2020 - Present*

- Working at CVIT lab, IIIT Hyderabad under guidance of Prof. C.V. Jawahar, Prof. Vineeth Balasubramanian and Prof. Chetan Arora.
- My current research is highly focused in Autonomous Driving field using Deep Learning and Computer Vision. I have experience working on broader domains of Computer Vision for Autonomous Driving research mainly Domain Adaptation, Few shot and Incremental Learning, Graph Convolution networks as well as LSTM/RNN based reasoning for spatiotemporal video data.
- Our work titled, "To miss-attend is to misalign! Residual Self-Attentive Feature Alignment for Adapting Object Detectors" got accepted at WACV conference 2022.

BARCLAYS *Pune, India*

Graduate Analyst - BA3 *Aug. 2018 - Present*

- Demonstrated Machine Learning skills in a presentation on "Machine Learning" through Knowledge Cafe Session at Barclays covering basics of ML and Neural Networks broadly wherein I created a demo using Jupyter Notebooks for a Rock Papers Scissors game using Neural Networks.
- Worked on Sentiment Analysis of Customer Survey responses for Online Banking collected by NPS survey to understand reviews of customers on Online Banking features and created a Dashboard in AngularJs to display visualisations on sentiments of Customers for different features
- Worked on new feature that offers customers read-only services when mainframes are down which can be done by using data held on ODS (Operational Data Store) which is accessed via uplifted Mid-Tier Services (MTSs) by using a switch with four possible modes.
- Implemented server side solution to prevent CSRF attacks wherein two factor authentication wasn't used.

HackersDigital *Pune, India*

SECURITY ENGINEER AND ANDROID DEVELOPER *Mar. 2018 - Apr. 2018*

- Implemented Android app for loan collection.
- Build and automated installation of vms on ESXI servers

Research and Projects

Residual Self-Attentive Feature Alignment for Adapting Object Detectors [WACV 2022] *Nov. 2020 - Jul. 2021*

Computer Vision, Artificial Intelligence, Domain Adaptation, Object Detection, State-of-the-art

- Our novel method, ILLUME aims to attend prominent instance-specific regions, overcoming the feature misalignment issue.
- ILLUME comprises Self-Attention Feature Map (SAFM) module that enhances structural attention to object-related regions and thereby generates domain invariant features. Our approach significantly reduces the domain distance with the improved feature alignment of the instances.
- Experimental results on several benchmark datasets show that our method outperforms the existing state-of-the-art approaches.

CycleGans as Data Augmentation for Underwater Plastic Detection and Cleaning *Apr. 2020 - Aug. 2020*

Computer Vision, Artificial Intelligence, CYCLEGANS

- Worked on this research project right from collecting and creating dataset from scratch as there's no dataset readily available on internet for this problem statement
- Implemented my idea of using cyclegans as Data Augmentation technique to convert in air plastic to underwater style for underwater plastic detection which further improves performance by detecting even in conditions like turbidity.
- Trained FasterRCNN detector on the proposed dataset and could get significant performance with the variational augmentation.

Multiclass Image classication on UC-Merced LandUse Dataset *Sep. 2019 - Dec 2019*

MACHINE LEARNING, Computer Vision, DCT, LBP, FUSION OF CNNs

- This project aims at classification of remote sensing image dataset.
- The model developed for classification is a fusion model of spatial features with dct features.3-layer fusion model of cnn is used with dct and lbp to improve the accuracy of prediction.

Aspect Based Sentiment Analysis on NPS survey data for Retail Online Banking *Oct. 2019 - Dec. 2019*

Natural Language Processing, Machine Learning

- Implemented an aspect based Sentiment Analysis on NPS (Net Performer Score) Survey Data for Retail Online Banking Platform to understand reviews of customers on Online Banking features like Payments or Homepage etc.
- Also created a Dashboard in AngularJs to display visualisations on sentiments of Customers for different features.It helped in analysing what improvements can be done by analysing the negative reviews for the particular features.

IOT based Smart Home using Face Recognition *Aug. 2017 - Feb. 2018*

Machine Learning, Image Processing, IoT

- This project provides controlling and monitoring of home appliances as well as provides security from unknown persons.
- We proposed a system for Smart Home Automation technique. To design this system, we used a Raspberry Pi module and Computer Vision techniques, OpenCV and image processing algorithms.

NGO Helper App *Mar. 2018 - Apr. 2018*

Android Studio, Firebase Database

- An Android app that helps people to communicate with NGOs by easily finding nearby NGOs and their information through app , so that they can help society by donating the needful things and thereby contributing towards their progress and a better living.
- A user can easily track NGO's nearby his/her location and can select any activities further like birthday celebrations or donations to be done to a selected NGO with further enquiries.

Geek Quiz *Nov. 2016 - Dec. 2016*

TURBO C++, DATA STRUCTURES

- A user friendly Techno-Quiz application which lets you analyze your knowledge.
- It is a 3 level quiz which proceeds to next level after user achieves a badge for that level

Skills

Programming Languages	C, C++, Python, R, Octave, Core Java
Platforms	Anaconda , Pytorch, Jupyter notebooks , Tensorflow , skicit-learn , Matlab / Octave , Kaggle
Databases	MYSQL database, Firebase database
IDE's	Pycharm, IntelliJ, Android Studio, Turbo C++, Eclipse, QT Creator

Activities & Achievements

2021	**Reviewer at WACV 2022, an international vision conference**, USA	*Hawaii, USA*
2021	**Interviewed students for applications of research scholar position at CVIT lab IIIT,** Hyderabad	*IIIT Hyderabad*
2019	**Organised HOUR OF CODE as an initiative for International Coding Week,** to teach school students Coding and Algorithmic Concepts by innovative and simple games	*ZP School Talegoan, Pune*
2017	**Earned a certificate in Machine Learning by Stanford University,** on Coursera with grade of 96.5 %	*Coursera*
2017	**Qualified Google Codejam,** Round 1.	*Google CodeJam*
2017	**Semi-finalist,** Reached the Semifinal round of TCS Codevita 2017.	*PCCOE, Pune*
2018	**Runner up,** Secured 2nd position in Just Coding competition at ACM-W during celebration of women in computing at PICT APCWIC	*PICT, Pune*
2011	**State level,** Swimmer	*Balewadi, Pune*
2017	**Finalist,** Secured 1st position in BE-C contest of Hackerrank	*PCCOE, Pune*
2018	**Earned badge for Algorithms domain on Hackerrank,** (achieved 3 off 4 stars)	*Hackerrank*
2016	**Secured 5th position in Codewars event of Techlligent,** (National Level Event)	*PCCOE, Pune*
2011	**Secured 1st position in class and 275 State rank ,** International Olympiad of Mathematics	*KSDSV, Satara*
2014	**Worked as Representative of Cultural Club ,** in First Year Department of Engineering	*PCCOE, Pune*
2012	**Attended Inspire Internship Camp held at IISER ,** Pune	*IISER, Pune*