Janhavi **Khindkar**

Applied AI Researcher · Bhashini

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Summary

Passionate Engineer with 5+ years of experience in the field of Machine Learning & Deep Learning. I aspire to develop effective and intelligent solutions to solve real-world business problems.

Education

Savitribai Phule Pune University *9.34 SGPA*

B.E. in Computer Engineering *Aug. 2016 - Nov 2020*

Skills

Programming Languages	Python, C, C++, R
Frameworks & Packages	Tensorflow, Pytorch, Numpy, Scipy, Pandas, Seaborn, Sagemaker
Machine Learning Skills	EDA, NLP, Computer Vision, Data Analytics, Traditional ML
Cloud Services	Amazon Web Services, Google Cloud Platform
Certifications	GCP Associate Cloud Engineer, NVIDIA rapids, Quantum Computing by MITxIBM

Experience

Bhashini @Product Labs IIITH. *India*

Applied AI Researcher *Dec. 2023 - PRESENT*

- **Key Qualifications & Responsibilities**
  - Spearheaded the development of a cutting-edge, low-latency real-time speech-to-speech pipeline with an end-to-end architecture.
  - Led the optimization team, focusing on deploying and fine-tuning regional language LLMs using Triton for all India consortium as a part of Government of India initiative.

Quantiphi Analytics Solution Private Limited *India*

Senior Machine Learning Engineer, 2022 - 2023

Machine Learning Engineer, 2020 - 2022 *July. 2020 - 2021*

- **Key Qualifications & Responsibilities**
  - Leading a team to work on improving mathematical reasoning of LLMs
  - Working on implementing recommendation engine for EdTech using knowledge tracing with transformers.
  - Worked and developed single model to perform NER and Intent classification for chatbot using LMs improving the performance by 10 percent leading to 20 percent increase in chatbot engagement due to improved customer satisfaction.
  - Worked on quality assurance of chatbot using semantic similarity and POS tagging leading to 5 percent improvement in performance
  - Designed and developed anomaly detection system to detect anomalous user behavior leading to 60% reduction in manual effort
  - Developed background replacement segmentation model with shadow for showroom leading to 30% improvement in user engagement.
  - Predicted credit default risk on imbalanced data with almost 12% improvement over client's in-house model.
  - Developed responsive Hotel-Booking chatbot with payment using GPT3 with 10% improvement in user engagement.
- **Key Achievements:**
  - Leading a research team to work on mathematical reasoning of LLMs
  - Won Think Tank Award Innovation Award for individual contributions. Won Kingsmen award for team performance
  - Mentoring new batch of ML Interns as well as delivering sessions on probability and AWS cloud.

Publications

Inventor : Khindkar, Janhavi 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*

Inventor : Khindkar, Janhavi M. **AUTONOMOUS UNDERWATER VEHICLE FOR PLASTIC DETECTION, PLASTIC PROCESSING AND CLEANING,**
Patent No : *201921043504*

Author:Janhavi Khindkar **Computer Vision based Autonomous Underwater Vehicle with Robotic Arm for Garbage Detection and Cleaning**. Submitted under review in WJSS

Author:Janhavi Khindkar **Multiclass Image Classification for Aerial Vehicals on UCMerced Dataset using TSBTC**. Published in ESCI(IEEE conference).

Projects

Background Replacement of Showroom Cars
Aug. 2021 - Oct 2021

Segmentation, Attention

- Implemented state of the art semantic segmentation algorithm for replacement of car from background.
- Designed and developed attention based shadow generation of segmented car and intersected the mask with shadow and new background
- Developed approach led to 30% improvement in user engagement of the website

End to End algorithm for fractured bone alignment and reconstruction
Apr. 2021 - Oct 2021

3D vision, segmentation ,3D Registration

- Designed point mesh from the input CT scan data of patient.Developed segmentation algorithm for segmenting different parts of broken bone mesh and generated different segment parts of broken bone.
- Implemented modified 3D registration algorithm ICP with RANSAC for reconstruction of broken bone.
- Developed approach led to 60% automation in total process.

Detecting Anomalous User Behaviour
Nov. 2021 - Present

Clustering, EDA, NLP, Cybersecurity

- Parsed Email logs and generated the data for ML usecase.Performed EDA and Feature Engineering using domain knowledge of cybersecurity
- Performed analysis using NLP techniques of TF-IDF & fuzzy matching for anomalous flagging of subject and recipients.
- Implemented anomaly detection models on final feature set leading to 60% reduction in manual effort

CycleGans as Data Augmentation for Underwater Plastic Detection and Cleaning using Self attention
Apr. 2020 - May. 2020

Computer Vision, Artificial Intelligence, CYCLEGANS

- Collected and generated dataset of plastic debris from scratch using web scrapping. Augmented the collected dataset to improve data quality.
- Implemented cyclegans as Data Augmentation technique to convert in air plastic to underwater style for underwater plastic detection. Implemented different algorithms like Faster RCNN or YOLO/SSD and compared the accuracy on dataset.To focus properly on the debris we used self attention mechanism to improve detection. Our model beats the current SOTA by 6%

Underwater Autonomous Vehicle for Plastic detection and Cleaning Using Computer Vision and robotics (Capstone Project)
Aug. 2019 - May 2020

Computer Vision, Artificial Intelligence, IoT, Stereo Vision

- Built an underwater autonomous vehicle capable of detecting underwater garbage using computer vision
- The designed machine is able to detect the plastic, calculate distance using sonar and OpenCV and then collect the detected garbage using Robotic Arm.
- The collected garbage would be compressed in a compressor attached and would be collected in an attached net.

Multiclass Image classication on UC-Merced LandUse Dataset
Aug. 2019 - July 2020

Computer vision,Machine Learning, Image Processing,TSBTC, DCT ,LBP,Fusion of cnn

- This project aims at muticlass 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 improce the accuracy of prediction.It uses TBSTC as image processing unit for generating spatial and temproal features
- Our proposed architecture gives 99.12 accuracy which beats current state of the art.

Activities & Achievements

2022	**Kingsmen**,	*Mumbai*
2021	**Think Tank and Innovate**,	*Bangalore*
2020	**Certified Google Associate Cloud Engineer**,	*Pune*
2020	**Selected for Qubit by Qubit Course**, MITxIBM	*MIT(virtual)*
2019	**Google Explore ML Instructor**,	*PCCOE, Pune*
2020	**Water Olympiad Winner** , University Level Project Competition	*SPPU, Pune*
2017	**Semifinalist**, Lady Ada Competition	*SPPU, Pune*
2019	**Semifinalist of Avishkar** , State Level Project Competition	*SPPU, Pune*
2019	**Semi-finalist**, Reached the Semifinal round of TCS Codevita 2019.	*PCCOE, Pune*
2018	**GRACE HOPPERS CELEBRATION INDIA (GHCI) scholarship**,	*PCCOE, Pune*
2016	**Lila Girl**, LILA Poonawala Foundation Scholarship holder of Rs. 60,000 for all academic years	*LPF, Pune*
2016	**Kiran Girl Scholar**, Persistent scholarship holder of Rs. 40,000 for all academic years	*Persistent, Pune*
2018	**Mentorship Head of PCCOE-ACMW**,	*PCCOE, Pune*
2018	**President of PCCOE-ACMW**,	*PCCOE, Pune*
2019	**Selected for ACM Summer School at COEP Pune**,	*COEP, Pune*
2018	**Earned badge for Algorithms domain on Hackerrank, (achieved 3 off 4 stars**,	*Hackerrank*
2014	**Best Outgoing Student at Sarhad International School**,	*Pune*
2010	**State Level Hockey Player**,	*KSDSV, Satara*