TANISHA KHURANA

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EDUCATION

Bharati Vidyapeeth (Deemed to be) University, College of Engineering, Pune **July 2014 – July 2018**
Bachelor of Technology - Electronics & Telecommunication Engineering **CGPA** – 9.22/10
Relevant Courses- Digital Signal Processing, Signals and Systems, Microprocessors and Microcontrollers, Embedded systems, Digital Image Processing, Artificial Intelligence and Robotics, Data Structures and Algorithms, Information Theory and Coding

SKILLS

Languages: Python, C/C++, MATLAB, SQL, Git, Bash,Docker **Tools/Platforms:** Amazon Web Services, Arduino, Raspberry Pi
Frameworks - OpenCV, Tensorflow, Keras, Pytorch,Scikit-Learn, Numpy

EXPERIENCE

Computer Vision Research Engineer, Wobot.ai **May 2021 - Present**

- Engineered solutions to create Proof of Concepts for various use cases in Video Analytics and Smart Surveillance using RTSP video streams.
- Developed face recognition attendance system and face mask detection pipeline using **AWS Rekognition** and **Xception**.
- Implemented multiclass recognition for safety jackets, helmets, hand, face and head using **Yolov5 object detection** with an mAP of 0.97.
- Scaled ML models in high-throughput and low-latency using **triton inference server** and use cases in production ready dockerized containers and integrated with the frontend UI.
- Formulated algorithms for **activity recognition** using Activity SlowFast, **pose estimation, motion detection** and for object tracking using **Deep Sort, Optical Flow and Kalman filter**.

Research and Development Engineer, Intello Labs Pvt. Ltd **January 2020 - May 2021**

- Led the end to end development of object detection models for Intello Sort, company's flagship product to sort defective commodities.
- Developed fruits,vegetables and spices quality grading system using **Faster RCNN, Efficient Det and Mask RCNN** with inception-V2 and ResNet50-101 as backbone for object detection and semantic-segmentation and object tracking using **Centroid Tracking algorithm.**
- Achieved identification accuracy of more than 98% and classification accuracy of approximately 90% and successfully deployed at client site for live usage.
- Implemented image processing algorithms such as **Colour Segmentation, K-means Clustering, PCA** using Python and OpenCV such that the commodities get classified according to size and colour and stored results in mySQL database.
- Deployed model on edge devices such as **NVIDIA Jetson NANO, Jetson Xavier and Tx2** and carried out real time video streaming on multiple Raspberry Pi's.
- Integrated the model using **Intel OpenVINO** toolkit and deployed on Intel's devcloud.
- Trained a 51 fruits and vegetables commodity **SSD object detection** model and quantized to TFlite for **Google Coral Board TPU** and fine tuned the accuracy using data augmentation techniques.

IOT Engineer, Qiggle.ai **January 2019 -October 2019**

- Developed a predictive analytics solution for industrial applications using **Anomaly detection** and **remaining life estimation**.
- Executed the transmission of data from NTC thermistor and accelerometer via ESP WiFi module for **vibration analysis** using Python **Socket Programming**.
- Engineered the ingestion of packets in AWS S3 through EC2 instances for deploying automated logs to the database using Flask API.

Data Science Intern, Innefu Labs Pvt. Ltd **October 2018 -December 2018**

- Modelling of Convolutional Neural Network model ResNet 50 and **YOLOv3(You only look once)** for face detection and weapon detection as part of the AI Vision team and achieved a TPR of more than 98%.
- Collaborated on dataset manipulation, data cleaning and attribute classification for dataset provided by Delhi Police law enforcement for missing persons detection, intrusion detection, security surveillance

Electronics Engineer, GenElek Technologies Pvt. Ltd **August 2018- October 2018**

- Worked on building affordable and light-weight lower limb exoskeletons for the specially -abled.
- Responsible for the actuation and simulation using **Arduino Uno, L293 H-driver, linear actuator** and **DC motor** and developed the algorithm for sitting and standing.
- Implemented the results from **EMG muscle Sensor** on oscilloscope and LabVIEW.
- Calculated the orientation using **MPU 6050 accelerometer** and gyroscope

PROJECTS

Modeling Food Web and Forecasting Populations for Endangered Wildlife Species **April 2021-June 2021**

- Collaborated with project partner Endangered Wildlife OÜ through Omdena to build an automated data collection and extraction tool that uses an NLP model that tracks the population of different animal species over time.
- Scraped pdfs using **Beautiful Soup** and Google Scraper API and parsed them using **pdfminer, science parser** and tabula for table parsing.
- Used **Haystack BERT QA** model for population retrieval of the species along with the year and **GloBI API** for calculating food web matrix interaction
- Deployed the entire pipeline on Ec2 using a custom built **Streamlit** app.

Helping the Energy Industry Achieve Digital Transformation Through AI **July 2021 - August 2021**

- Built computer vision models for automating the conversion of the Piping and Instrumentation Diagram (P&ID) documents to their digital format.
- Detected and localized symbols of pipes,valves etc using **Detectron2** and template matching and generated synthesized images using **Conditional GANs.**
- Applied **Hough transform** for line detection and tested out a **U-Net** model for line segmentation.
- Implemented existing different OCR methods such as **Pytesseract**, EAST text detection and **EasyOCR** along with hyperparameter tuning for text detection and mapped them to the symbols.

A Real Time System for Water Quality Measurement using GSM **March 2018**

- Built a cost-effective and efficient solution for measuring and monitoring the water quality parameters such as temperature, pH value and turbidity and sends an SMS of the values in real time.
- Integrated **Arduino Uno** with **Turbidity, pH** and **LM35 temperature sensor** modules with **GSM SIM 900** and **LCD** 16x2 display.
- Published paper in International Journal of Industrial Electronics and Electrical Engineering , Volume-6,Issue-3

COURSES

- Machine Learning by Andrew Ng from Coursera (Stanford University)
- Deep Learning Specialization by Coursera (Deeplearning.ai)
- Mathematics for Machine Learning by Coursera (Imperial College London)
- Image and Video Processing: From Mars to Hollywood with a Stop at the Hospital from Coursera (Duke University)
- Applied Data Science with Python Specialization by Coursera (University of Michigan)
- Generative Adversarial Networks (GANs) Specialization by Coursera (Deeplearning.ai)

EXTRA-CURRICULAR

- Development Volunteer at **Bhumi**: As part of Daan Utsav, I was responsible for creating and revamping websites for NGO: Cards (Community Action for Rural Development Society) and Chaitanya Charitable Trust.
- Volunteer at **WWF India:** Volunteered in E-Waste Drive by visiting government schools across Delhi and spreading awareness regarding electronic waste along with Chintan Environmental Research and Action Group. Part of the WWF team of volunteers for Ek Prithvi, conducted surveys from students in classes 6-8 for adopting sustainable practices in the school and analyzed data collected on MS Excel.
- Editorial Head of ETSA (Electronics and telecommunication student's association) at Bharati Vidyapeeth,Pune
- Editorial team member for **GENRE**, Bharati Vidyapeeth's Annual magazine
- Member of the content writing team for department newsletter '**ENVOY**'
- General Body Member of **Leo Club, Pune**: Helped in raising funds for the underprivileged through social events and visits across the city.
- Member of Creativity and Marketing team for Bharatiyam (annual fest at Bharati Vidyapeeth)