Vaishnav Potlapalli

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Education

2016–2020 **Bachelor of Technology in CSE**
Mahindra Ecole Centrale, Hyderabad, India

Experience

April'20– Present **Machine Learning Engineer**
Dhan AI, Hyderabad, India.

- I work on building products for the healthcare domain, that are powered by Machine learning and Natural Language Processing
- Developed Natural Language Understanding models for tasks like Intent and Entity recognition. The models were built using an ensemble of BERT-based Classifiers, improving performance on internal benchmarks by 12%.
- I am also responsible for the maintenance of a large unbiased data set of bot-customer conversations.
- Designed and Developed the ETL pipelines to load data for analysis of customer responses.

May'21 - Present **Research Collaborator (Advisor : Dr.Yi-Zhe Song)**
CVSSP, University of Surrey

- Developed a method to tackle test-time distribution shift in the context of cross-model Image retrieval.
- We are working towards developing data efficient training methods of HTR models.

June'19– January'20 **Research Intern (Advisor: Dr.Ravikiran S)**
Centre for Visual Information Technology, IIITH

- Worked on the problem of detection of tables in degraded medical document Images.
- Created a fully annotated data-set consisting of camera captured degraded medical document images called MediTables-IIIT.
- Developed a semantic segmentation model to act as a baseline for further research.
- The work was published as part of IAPR International Workshop on Graphics Recognition (GREC 2021)

May'18 - December'18 **Intern**
Product Labs, IIITH

- The lab focused on building market-relevant products based on the research done at the labs of IIITH.
- Developed a handwritten bank form parsing tool, which extracted relevant information from the forms and stored it in a database.
- Implemented Image registration for the purpose of template matching using SIFT and RANSAC algorithms
- Implemented a CRNN model to act as the OCR for handwritten text recognition.

Publications

- Akshay Deshpande, **Vaishnav Rao Potlapalli**,Ravikiran Sarvadevabhatla. MediTables: A New Dataset and Deep Network for Multi-category Table Localization in Medical Documents GREC 2021

Works under Progress

- As a visiting researcher at University of Surrey (Dr.Yi-Zhe Song), I've worked on Cross-Modal Image retrieval Submitted our work to **CVPR-22**.

Major Projects

August'19–March'20 **ROBOMUSE - Autonomous Mobile robot platform**
ROS, OpenCV, PyTorch, C++, Python
- Worked on developing the visual module of a mobile robot platform with autonomous path planning and navigation. The visual module alongside LIDARs was used for SLAM.
- Built a stereo camera from scratch using two monocular cameras, and implemented stereo calibration and stereo matching to capture RGB-Depth Images
- Implemented YOLO and SSD models for object recognition, and adapted them to work on RGBD Images

January'19–April'19 **Automated Audio Translation Tool**
PyTorch, Django , Python
- Built an automated tool that translates source audio to the desired target language.
- Developed the processing pipeline which consisted of STT, Machine Translation and TTS models.
- Implemented a LSTM model based on the seq2seq framework for the purpose of Machine Translation.
- Utilized DeepSpeech2 and Tractron2 for the purpose of STT and TTS models.

July'18–Nov'18 **PhysioLive: Virtual Assistant for Physio Therapy.**
Django, Tensorflow, C++, Python
- Developed an application that uses human pose estimation and anomaly detection to identify when a patient is practicing the wrong postures during physiotherapy exercises.
- Used Openpose model to identify human poses during physio therapy exercises.
- Adapted ROCOD method for outlier detection in-order to identify wrong poses.
- Developed the backend of the application using Django .
- The project won the first place at MedTech Hackathon organised by Novartis.

Projects

Computer Vision: Person Re-identification, Image Captioning, Number Plate Recognition, Face Anti Spoofing, Image generation using DCGAN, Image Stitching, Image Style Transfer

Computer Science: Reimann Integration Python Package, Developed a Mini-OS, Hinglish Language Modelling ,Lisp Interpreter,IRC Client using Haskell.

Technical Skills

Programming: Python, C, C++, SQL,GO,Javascript, HTML/CSS, Haskell

Softwares: TensorRT, Docker,PyTorch, OpenCV, Keras, Flask, NLTK, HF-Transformers, Spacy , CUDA, Tensorflow

Courses and Certifications

- Machine learning Summer School (EEML 2021)
- 5th Summer School on Artificial Intelligence at IIIT-H
- Fundamentals of Reinforcement learning - Coursera
- Fundamentals of Accelerated Computing with CUDA C/C++ - Nvidia DLI

Extra Curricular Activities

- I headed the gaming club at Mahindra Ecole Centrale, where I organised multiple tournaments and events.
- I am a life member of the Indian Red Cross Society since 2018, and volunteered in organizing multiple events like blood donation drives
- I served as the Technical Coordinator of the sports fest Airo 2019, conducted by Mahindra Ecole Centrale.
- I was an active member of the debating club at Mahindra Ecole Centrale and represented the college at various competitions.