Praneet Bomma

Data Scientist

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WORK EXPERIENCE

Data Scientist
Blackstraw.ai *09/2019 - Present*

Machine Learning Engineer
Vidgyor Media Technologies *06/2019 - 08/2019*

Deep Learning Engineer
Mobicule Technologies *12/2018 - 01/2019*

React Native Developer
Digiklug Solutions LLP *08/2017 - 08/2018*

SKILLS

Deep Learning | Machine Learning | Computer Vision | Keras | Pytorch | Tensorflow | Sklearn | OpenCV | Deepstream | NLTK | CoreNLP | Edge Computing | Python | Docker | TF Serving | SQL | TensorRT | Pytorch Distributed | ROS

EDUCATION

B. E.
Mumbai University
2015 – 2019 *7.23 CGPA*

PROJECTS

Health Risk Monitoring System (Blackstraw)

CCTV Surveillance system to detect Social Distancing & Facemask violations
- Built facemask and social distancing violations detector using Yolov3
- Optimized Yolov3 model using TensorRT for faster inference.
- Developed algorithm to approximate distance between 2 persons that takes into account the vertical axis.
- Deployed 40 cameras in production Deepstream 5.0
- Dockerized components for production deployment.

MAFAT

Data Science competition by The Israeli Ministry of Defense Directorate of Defense Research & Development (DDR&D) to classify whether a radar signal segment represents a human or an animal.
- Achieved Rank 23 globally on the competition public leaderboard.
- Implemented CRNN architecture for classification.
- Achieved 0.9028 ROC AUC score.
- Worked with Focal Loss and Hyperparameter tuning for tackling class imbalanced data issues.
- Used ensemble technique to get the best score between 2 well performing trained architectures.
- Worked on transformers for improving the AUC score.

Pufferfish Ventilator (Blackstraw)

Open-source full-featured ICU ventilator designed with rapid manufacturability in mind.
- Handled the deployment side of the project.
- Wrote bash scripts to setup environments of the backend, frontend and other components on Raspberry Pi.
- Wrote custom system services to automate the functioning of the software components.
- Customized Pi OS functionality for manual control over all components.
- Secured Raspberry Pi for system integrity and failure handling.

Docify (Mobicule)

System to extract details from Indian ID cards like Aadhar Card, PAN Card and Driving Licence.
- Trained UNet model for segmenting ID cards in a busy background.
- Used CTPN for text localisation and Tesseract for text extraction.
- Implemented image processing techniques for improving input data to tesseract for better extraction.

Similarity Search

Image based search engine to search apparel with similar patterns.
- Trained an Auto-Encoder to extract compressed representations from an input image.
- Built a search engine which could return apparel with similar patterns
- Implemented a REST endpoint for inference.

Autonomous Navigation (Blackstraw)

Autonomously navigating Maini using Stereo Camera and LIDAR.
- Implemented real-time instance segmentation using Yolact++.
- Improved segmentation results by augmenting data to handle camera lighting issues.
- Formulated and implemented Neural Path Planner to achieve intermediate waypoints independent of GPS.
- Improved Occupancy Grid generation from 4 FPS to 20 FPS.
- Worked on Path Planner with Dynamic Window Approach for achieving intermediate goals.
- Integrated all components and implemented inter-process communication between components using Robot Operating System (ROS).

ReLIE

Implemented paper by Google Research - Representation Learning for Information Extraction from Form-like Documents.
- Implemented the neural network described in paper from scratch.
- Filled up the gaps/unknown things left out in the paper during implementation.
- Used a publicly available dataset.
- Improved results by using Focal Loss for imbalanced data.

Document Intelligence (Blackstraw)

Extracting entities from loan documents, invoices, receipts, pamphlets, ID cards, etc.
- Trained an object detection model to detect tables, rows and columns.
- Worked on CoreNLP for NER tagging.
- Implemented heuristic rules and algorithms to extract entities with corresponding values.
- Trained a document classifier to detect type of document from 13 types of documents.

Plant Monitor

System to detect disorders in tomato plants based on sensor data and leaf image.
- Implemented transfer learning with VGG19 and Resnet50 for classifying disorders.
- Implemented voting based ensemble model with KMeans, Random Forests and SVM.
- Worked on Arduino Mega to setup sensor data collection from soil moisture, temperature and humidity sensors.
- Wrote a paper that was published in Asia-Pacific Federation for Information Technology in Agriculture in IIT Bombay.
- Continuing to assist Assistant Professor for PhD in same project.

ACHIEVEMENTS

MAFAT Challenge

Ranked 23rd globally in MAFAT Challenge organized by Israeli Ministry of Defence. Only 25 teams out of 300 got AUC above 0.90.

Outstanding Performer

Awarded the best performer for Q2, Q3 - 2020 and Q1 - 2021 in Blackstraw

1st Runner-Up

Hackathon organised by K. J. Somaiya College, Vidyavihar

1st Runner-Up

ITSA Hackathon organised by Sardar Patel College of Engineering

ACTIVITIES

Official author for Towards Data Science Publications

Published Paper in AFITA Conference on Disorder Detection of Tomato Plants using Ensemble Techniques

Head Organiser of ERR_404 2.0 State Level Hackathon

BLOGS

Visualising LSTM Activations in Keras

Towards Data Science

Indian Financial Markets in Pandemic

Report

Distributed Training in Pytorch - Part 1 (DDP)

Analytics Vidhya

Real-time Object Detection on CPU

Towards Data Science

CERTIFICATIONS

Deep Learning Specialization

Coursera

HOBBIES

I love playing sports. Especially Cricket & Football.

I closely follow Indian Cricket and English Premier League.

Learning to play guitar.

I like talking about tech.