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LinkedIn GitHub

SUMMARY

To develop a research career and excel in an intersection of Image Processing & Machine Learning; Data Science & NLP via challenging milieus and ultimately gift something beautiful to the world.

EXPERIENCE

AI Research and Development Intern
Centre of Excellence, Artificial Intelligence- MCTE, Indian Army   Nov 2019 - Feb 2020, Indore, Madhya Pradesh
Research intern under Lt. Col Anant Bhatt. Worked on Developing **APISE** software
(AI-Powered Intelligent Surveillance Engine). This system combines the working of Object Detection and Facial Recognition methods. Worked on Enhancing Facial Recognition software for long-distance and using Image Super-Resolution concepts for better results. Custom Object Detection and Object Tracking to detect and track Terrorists, ANEs, Civilian, Arms and A vehicles. Alarm trigger system for suspect spotting

Machine Learning Research Intern
Bhaskaracharya Institute for Space Applications and Geo-Informatics (BISAG) May 2019 - June 2019, Gandhinagar, Gujarat
The aim was to develop a system to identify a person-of-interest based on a specific set of soft biometric attributes from a surveillance video. The tasks assigned included; creation of private dataset at BISAG premises, foreground-background estimation with deep learning and computer vision techniques, gait analysis, feature extraction, dimensionality reduction and training a machine learning model. The research was carried out in two phases; in the first phase analyze and device algorithm for person identification on CASIA Gait Dataset. Later, tested on a private gait dataset to ensure the results from the first phase are consistent and accurate.
(In the process of writing a research paper in a renowned journal to publish the findings)

PERSONAL PROJECTS

Feature based Person Re-Identification from CCTV stream
Using Deep Learning to extract a rich 512-D feature vector from every person which is further used as features to re-identify the person caught on different CCTV cameras from various different locations in the city. TOP-5 accuracy: 96%
Keywords: Deep Learning, PyTorch, Python

A composite DNN solution to predict and generate potential COVID-19 antidotes
(A project under guidance of Govt. of India in association with NVIDIA, C-DAC & National Super Computing Mission (NSM))
We have designed a novel composite Deep Learning solution consisting of a Predictive Network Architecture and an Inter-leaved GAN architecture to predict & generate potential antidotes. The model learns from all the available compounds (~72M +) by combining various datasets to predict or generate new potential drugs (Detailed Report)

Real Time Person Identification using Gait Energy Image (GEI)
Detection of human gender and identifying the person from complex background, illumination and subject variation by machine for adaptive information service. Worked on SOTON Dataset and achieved 99.6% accuracy
Keywords: Python, Machine Learning, Image Processing, OpenCV

Multi-Label Satellite Image Classification, Image Super Resolution
Using Deep Learning Techniques to perform tasks related to Image Super-Resolution and Multi-Label Image Classification on Satellite Images
Keywords: PyTorch, Machine Learning, Deep Learning, Python, SNAP

SOFTWARE GROUP PROJECTS

TriNetra
Software built for Smart India Hackathon 2020 (National Winners) and further integrated into Bureau of Police Reforms, Govt. of Madhya Pradesh. Deep Learning enabled smart surveillance system which has the capability to classify the clothing attributes of every/suspected person from the CCTV stream and compile the related meta-data information in database, tracking a person in real-time, person re-identification image search engine for post crime analysis. Links: Detailed Information, Demo Mobile Application
Keywords: Deep Learning, PyTorch, Microservices, REST APIs, Flutter, Django, GCP, Python

APISE – AI Powered Intelligent Surveillance Engine
Software built for military purposes during my internship tenure at the Indian Army

EDUCATION
BTech, Computer Engineering
Charotar University of Science and Technology • 2021 • 8.96 SGPA

SKILLS

Python, Machine learning, Deep Learning, Computer Vision, Satellite Image Processing, MATLAB, Data Analysis, C, C++

Achievements

- **Smart India Hackathon 2020 – National Winner (secured 1st rank nationally and a cash prize of 1,00,000 INR out of a total 4.5 lakh participating students)**
- **Awarded research grant of 3,5,000 INR for my research work on Identification using Gait Energy Image**
- **State Rank: 2nd, Thomson Reuters, HackArena - AI Hackathon (Won a cash prize of INR. 30,000)**
- **TCS HumanAI competition National Finalist**
- **2nd Rank in IEEE " Ingenious Machine Learning Hackathon 2019", Inter-college competition at School of Engineering and Applied Science, Ahmedabad University, March 2019**
- **2nd Rank in IEEE Machine Learning Hackathon, DAIICT, June 2018**

INVOLVEMENT

Core Committee - IEEE Student Branch
Charotar University of Science and Technology • Core Committee member, Program Committee • Jan 2020 - Ongoing
• Conducted various workshops, Hackathons, webinars in the field of Machine Learning and Deep Learning

Hacker Earth
Campus Ambassador • 2019-20
• As a campus ambassador, my role was to conduct coding competitions, webinars and monthly talks on HackerEarth platform